AN ANALYSIS OF INTERIM CONTRACTOR SUPPORT COSTS IN THE WEAPON SYSTEM ACQUISITION PROCESS

THESIS

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Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Logistics Management

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Captain, USAF

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Preface

The purpose of this study was to determine what categories of items contribute the most cost and the highest demand for repair to interim contractor support in the acquisition process. The continuing efforts to reduce defense expenditures is making it necessary to gain organic maintenance capability earlier in the weapon system acquisition process.

This study could not have been completed without outside help. I wish to thank my faculty advisor, Professor Albert H. Rogers, for his support and advice from the very start. His interest in the topic helped me greatly. Another fine person who helped me was Colonel Russ Flint, HQ AFSC/PLL. He was knowlegeable of the problem and he provided excellent background papers that helped me focus the study. I owe him much thanks. I am also deeply indebted to Mr. Vern Cedarbloom, OC-ALC/MMBMS, for the B-1B data. He was familiar with thesis research and he knew what data would be appropriate for a study of this magnitude. My thanks also to Ms. Rexeene Stott, OO-ALC/MMAPCS, for the F-16 data she provided. Finally, I owe a great deal of gratitude to my wife, Denise, and my children who sacrificed my presence at their many activities while I completed this study. Their undying support made this effort a complete success.

Robert E. Dulong

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Abstract

The purpose of this research was to determine what categories of items contribute the most cost and the highest demand for repair to interim contractor support in the acquisition process. Six investigative questions guided the project: 1). What items do the contractors repair most frequently?; 2). Can these items be grouped by Federal Supply Classes?; 3). What are the costs associated with these items/classes?; 4). Are the items/classes the same or different in different weapon systems?; 5). What are the descriptive statistics for the various items/classes?; and, 6). What actions can the Air Force take to reduce the time frame for paying these costs?.

The study was conducted by performing a review of available literature, gathering samples of ICS repairs in both the B-1B and the F-16 programs, and analyzing those samples. Conclusions included answers to the investigative questions mentioned above.

Analysis of the data found few similarities in the two weapon system programs. Federal Stock Classes common to both weapon system programs exhibited differing behaviors. Cost data for the F-16 program was non-existent so cost comparisons in the two programs could not be achieved.

AN ANALYSIS OF INTERIM CONTRACTOR SUPPORT COSTS IN THE WEAPON SYSTEM ACQUISITION PROCESS

I. Introduction

General Issue

In this day of austere budgeting, the American public expects the military community to obtain the most combat capability for each dollar spent on new weapon systems. In considering the life-cycle costs of any weapon system, one must recognize logistics support costs as a major expense. A dollar spent on logistics does not necessary ensure the combat warrior's technological advantage. The balance sought is between the numbers of weapons, their capabilities, and the capability to deploy those weapons worldwide in a time-sensitive manner (19:32). Therefore, careful scrutiny of logistics support cost elements could reveal areas for improving the efficiency of defense spending by developing the most effective logistics support for the given situation (7:1-3). The Air Force must achieve the proper match between the operational equipment and the logistics support it requires; a mismatch could mean failure to accomplish a critical mission (19:31). One such aspect of logistics support, interim contractor support (ICS),

offers potential cost-savings (or cost-avoidance) through developing the support capability within the Air Force.

When procuring a new weapon system, the Air Force can 1) develop the organic capability to provide the logistics support for the new system, or, 2) contract for the support. Organic capability is the ability of Air Force military and civilian personnel to logistically support a weapon system. On the other hand, contractor support is provided by defense contractor personnel (usually administered by the prime weapon system contractor). When this contractor support is for a temporary period of time while the contractor helps the Air Force develop organic capability, it is known as interim contractor support (7:1-4).

Organic capability is not something that happens instantaneously. In a sense, it is a separate acquisition process to obtain all the facilities, trained personnel, support equipment, spare and repair parts, and technical data. In recent years, as weapon systems grew more complex the Air Force became more dependent on ICS to continue operations from the delivery of the first piece of equipment until organic capability was achieved (7:1-3,1-4). Air Force policy rules out using ICS as a panacea for acquisition program management problems such as program slippages and funding cuts. Rather, ICS is to be used while the details of the support requirements are being developed (4:2).

While ICS gives the Air Force some capability to use the new weapon system, it has its price. The Government Accounting Office found that the government pays contractor technicians about twice as much as it pays its own technicians (3:31).

Specific Problem

The purpose of this research is to determine what categories of items contribute the most cost and the highest demand for repair to interim contractor support in the acquisition process. A new system, the System Support Concept/Early Depot Activation, should phase out ICS expenses from Air Force programs. However, until that happens, the Deputy Program Manager for Logistics (DPML) and the System Program Manager in any acquisition effort need resources available to develop an ICS budget. Presently, these managers lack any database or historical analysis to help them focus their attention for developing earlier organic maintenance capability in those areas that can produce the largest savings (8:113).

Investigative Questions

The following investigative questions are intended to aid the progress of this research effort:

1. What items do the contractors repair most frequently?

2. Can these items be grouped by Federal Supply Classes?

3. What are the costs associated with these items/classes?

4. Are the items/classes the same or different in different weapon systems?

5. What are the descriptive statistics for the various items/classes?

6. What actions can the Air Force take to reduce the time frame for paying these costs?

Organization of this Thesis

This thesis is organized with a review of pertinent literature in chapter II, the research methodology described in chapter III, analysis of data in chapter IV, and conclusions/recommendations in chapter V. The B-1B database used for this thesis will be included as Appendix A, the F-16 database as Appendix B, the Federal Supply Class Titles in Appendix C, and the SAS statistical analysis output as Appendix D.

Scope

This thesis is focused on the interim contractor support provided to major aircraft weapon systems.

II. Review of Literature

Introduction

This review explores published material on the Interim Contractor Support concept to give the reader some background information on the concept.

Definition of Key Terms. What constitutes a major system? Department of Defense (DOD) Directive 5000.1 , consistent with the criteria of Section 2430 of Title 10 U.S. Code, defines a *major* system as one the Secretary of Defense has not designated as a highly sensitive classified program and:

> ...is a) designated by the Secretary of Defense as a major defense acquisition program because of urgency of need, development risk, joint funding, significant Congressional interest, or other considerations, or b) estimated by the Secretary of Defense to require an eventual total expenditure for research, development, test, and evaluation of more than $200 million (based on Fiscal Year 1980 constant dollars) or an eventual total expenditure for procurement of more than $1 billion (based on Fiscal Year 1980 constant dollars). (10:2)

Scope of Research. This review includes available periodic literature on the topic as well as government directives, concepts of operations, and system guidelines. The search for materials included a computer search of the Defense Technical Information Center archives and manual searches of the Air Force Institute of Technology, Wright

State University, University of Dayton, and Montgomery County Public Libraries.

The body of the review is constructed under the following headings: 1) Background, 2) Levels of Maintenance, 3) Advantages and Disadvantages of ICS, 4) The System Support/Early Depot Activation Concept, and, 5) Budgeting and Funds.

Background

Organizing, training, and equipping forces for prompt and sustained combat operations in defense of the United States are the primary functions of the Air Force; logistics support delivers the capability to meet those functions. But, what is logistics support? Logistics support includes all the manpower and materials necessary for the equipment to perform its assigned mission, including the repair of systems, subsystems and components, supply of spare components and parts to support the maintenance function, and various other indirect supporting tasks (7:1-3).

The Air Force has two basic alternatives when determining logistics support for a new weapon systems: either develop the organic capability to provide the support or contract with private industry. Organic capability is the ability of Air Force military and civilian personnel to provide the necessary logistical support for a weapon

system. On the other hand, contractor support is provided by civilian technicians working in private industry. The prime weapon system contractor usually administers the contractor support which is an expensive logistics support option. Contractor support provides the using command with some degree of operational capability, but its contributions to combat capability are questionable (7:1-4).

The use of civilian contractors in lieu of developing organic capability to support military systems is not new. In fact, Harold Bayer, Vice President for Product Support, Douglas Aircraft Company, cited instances where General Custer relied on local blacksmiths to maintain the shoes on his horses. Also, he suspects that the boat George Washington used to cross the Delaware was maintained by commercial sources. However, the growth of the defense industrial base in the last 50 years has placed a more "formal" status on contractor support for military systems (2:22).

Interim Contractor Support (ICS) Defined. ICS is a "pre-planned, temporary support alternative for the initial period of operational use of new U.S. Air Force weapon systems, equipment, or modifications for which eventual organic support is planned." The early selection of a logistics support concept provides effective support, avoids wasteful duplication of effort, and gives appropriate time to program, budget and manage resources (4:2).

The terms "interim" and "temporary" can be misleading. Most programs in recent years used some form of "temporary" or "interim" contractor support. Studying the length of time of this support leads one to question the definition of these terms. The transition from contractor support to organic capability requires some capital investment, and often, especially in times of budget crisis, investment items remain unfunded in lieu of some other entity. Therefore, organic capability is delayed and contractor support continues. Some examples of the contractor support and the length of time for that support are: B-52 Offensive Avionics System (5 years), KC-135R Conversion Program (6 years), A-10 Inertial Navigation System (7 years), and the F-16 program (10 years) (1:29). While it is entirely feasible that these programs experienced some design instability or support element delays, it seems that the basic intent of ICS was violated. ICS is normally intended to cover a specified period of time after the delivery of the first production article (weapon system, subsystem, component, or a given piece of military equipment) to the operational unit, but prior to the system's commitment to war plan tasking (4:5).

The system's commitment to war plan tasking is most often referred to as Initial Operational Capability (IOC). IOC is "...the first attainment of capability to employ a weapon, item of equipment, or system of approved specific characteristics, and which is manned or operated by an

adequately trained, equipped, and supported military unit or force" (8:9). Those systems noted above are well beyond IOC and still heavily dependent on ICS.

Air Force Policy on ICS. Air Force policy prohibits program managers from using ICS to compensate for actual or expected budget cuts or to mask the cost of weapon system production contract. The program manager is further restricted from using ICS as a reason for delaying program management responsibility transfer (PMRT). Rather, program managers are encouraged to use ICS as a method to control capital investment in logistics support resources while "...requirements are being refined, technical problems are being resolved, design stability is being achieved, and complex support resources are being developed." Policies include using both government and commercial resources to support readiness while maximizing cost-effectiveness. The particular weapon system maintenance plan will detail the required support and ICS is to be used only to provide the interim capability until organic capability is achieved. Under no circumstance is the use of contractor support allowed to degrade the overall Air Force safety program (4:2).

Qualifiers. The program manager has some constraints to meet in order to exercise his option to use ICS in a given acquisition effort. The weapon system being acquired must be: 1) a major system, 2) less than a major system involving either high risk or high cost, or 3) a

modification to an existing weapon system involving either high risk or high cost. Also, one of the following two conditions must exist: 1) the weapon system, subsystem, or component to be supported, or the support equipment that will provide the organic support, has an unstable design; or, 2) the lead time to acquire the support resources is greater than the using command's need date. Unstable design carries with it increased risk over the uncertainties in the type and level of support required. Insufficient lead time is a constraint in the acquisition decision. The final condition for ICS is the effort must be planned in sufficient time to allow budgeting actions to take place as well as subjecting the ICS alternative to rigorous cost and risk analysis (7:2-6).

Concurrency. Concurrency in acquisition programs is a relatively new term that signifies the simultaneous testing, production and deployment of weapon systems. When an acquisition program is concurrent, the time schedule of the fielding process is compressed, giving limited time to achieve organic capability (11:12).

In 1986, some program managers interviewed believed concurrency left them little option but to use ICS to support the new weapon system. Before concurrency, the goal was to have organic capability by initial operational capability (IOC) date. These program managers expressed doubt about being able to achieve organic capability with a compressed acquisition cycle. Instead, they supported a

notion to separate organic capability from IOC and they favored establishing an initial organic support capability date. They forecast concurrency as a routine matter in future acquisition programs and the initial organic support capability date represents a more realistic, more manageable support option (11:85).

Levels of Maintenance

The Air Force Maintenance System. The Air Force uses three levels of maintenance in the repair of systems, subsystems, and components: organizational, intermediate, and depot.

Organizational maintenance is the restoration of the system, subsystem, or component, at the "operator" level. Although it is often referred to as "flightline maintenance," organizational level maintenance also applies to equipment other than aircraft. Organizational maintenance is usually minor in nature for such tasks as servicing, cleaning, inspecting, and making minor system adjustments. At the organizational level, line replaceable units (LRUs) are removed from the end item (aircraft, equipment, etc.) and replaced with a serviceable unit. The failed LRU is forwarded to the intermediate level of maintenance for repair (20:8-11).

Intermediate level maintenance is field level repair of systems, subsystems, or components. More extensive than

organizational level maintenance, intermediate maintenance requires a more skilled technician to perform such tasks as adjusting, repairing, more extensive inspection, testing, and rebuilding. Here, the LRU removed at the Organizational level gets restored. The LRU becomes the end item and is repaired typically by replacing failed shop replaceable units (SRU). For this reason, intermediate level maintenance requires more special tools, equipment, and test stations. Most often, each base will have intermediate level maintenance shops attempt to repair the system, subsystem, or component; those failed components beyond the repair capability of the intermediate level maintenance shop will likely be forwarded to depot level maintenance for repair (20:8-11).

Depot level maintenance is the "industrial" level of the Air Force three-tier system. Depot maintenance tasks include major modifications, alterations, inspections with complete disassembly, and retrofitting of systems, subsystems, and components. The depot maintenance organization requires technicians with more extensive expertise and maintenance training. Typically, the depot organization will have an engineering support staff. The support equipment and tooling found at a depot is similar to that found in industry. Frequently, depot level maintenance organizations possess one-of-a-kind pieces of machinery to perform specialized tasks (20.8-12).

When a new system is being acquired, the alternatives for supporting the system must be considered at each level of maintenance.

The ICS Alternatives. Organizational level ICS is usually not employed because using commands want primary responsibility and control of the new weapon system. Also, organizational level maintenance gives the using command the opportunity to gain the capability to support limited operations. Design instability is not a good justification for organizational level ICS because an unstable design that affects this level of maintenance would likely affect the operational performance and readiness of the fielded system. In this case, further testing and development would be necessary to improve the design stability before committing it to the operational environment (7:2-12).

Intermediate and depot level maintenance tasks are most often placed in ICS because of the lack of the support resources, i.e. facilities, technical orders, and test equipment. Most often, support equipment at these levels has high significance due to the production lead times to procure the items. Once the support equipment issues are resolved, the pacing items are technical data and trained personnel (7:4-18). Design instability is another factor in assigning these levels to ICS. Often, ICS for the depot level takes advantage of the excess capacity from the production process due to the gradual build-up to full production (7:2-9). In this regard, end items are usually

fed back into the production line to be either overhauled or rebuilt (7:4-18).

ICS Effectiveness. The Air Force used ICS to overcome the time compression caused by concurrency in the B-1B program. Apparently, ICS was effective in that the B-1B program met its scheduled IOC date. However, ICS does not meet the same standards expected from organic maintenance. Under ICS, repair cycle times for many LRUs were more than 300% longer than would be acceptable for Air Force intermediate-level maintenance. Likewise, depot level repair cycle times for ICS LRUs were 192% longer than the Air Force standard for organic depot repairs. To compensate for longer repair cycle times, the supply pipeline must have more spares, a costly alternative (12:14).

Advantages and Disadvantages of ICS

ICS Advantages. The program manager who selects the ICS option for logistics support accumulates usage data before investing in support resources. Especially in this day, when technology develops rapidly and weapon system designs become unstable due to technical obsolescence, this advantage gives ICS a lucrative image. Provisioning of spares can be delayed until the design stabilizes sufficiently to make more logical and cost-effective decisions. Use of ICS takes advantage of excess production

capacity and the contractor can respond to design changes in a more economical way. Finally, using ICS allows for the evolution/maturation of support resources, i.e. support equipment, test equipment, and technical data (14:31-32).

ICS Disadvantages. While ICS offers some significant advantages, it also has some serious drawbacks. If the ICS option is not properly executed and the contract requires renegotiation, the Air Force could find itself in a sole-source negotiation situation. Should that occur and the contract extend due to failure to become organic, the cost would likely exceed the cost of organic support from the start. An additional disadvantage to ICS is that the contractor is susceptible to work disruptions, such as strikes, which are not typically encountered in organic support. The final disadvantage to ICS is the additional layers of bureaucracy involved in initiating, administering, and closing the contracts (14:32).

Combat Capability. While ICS gives a certain operational capability to the using command during the weapon system deployment, it is questionable whether that translates to combat capability. Congress has grappled with the issue of civilian logistics support of the military forces for more than 30 years. In time of crisis, the military logistics support elements are bound by federal statutes to be there to support the combat operations. However, any attempt to place civilians under military law has failed. In fact, in 1957, the Supreme Court ruled it

unconstitutional to place civilians under military law (3:34). To this date, the government lacks any assurance that civilian contractors would continue to perform their critical maintenance functions if hostilities are imminent or in progress (1:32).

In 1982, an Air Force headquarters study entitled "Air Force 2000: Air Power Entering the 21st Century," cited three major characteristics as essential in 21st century operations: mobility, flexibility, and survivability. Readiness and sustainability will depend on sufficient quantities of spares and the trained manpower to use them. The weapon systems must be deployable on short-notice to any world-wide location. These anticipated 21st century requirements, coupled with the lack of statutes to compel performance by civilian contractors in time of crisis, give ICS a dim prospect for providing logistics support for future Air Force weapon systems (19:34).

The System Support/Early Depot Activation Concept

In November 1986, the Vice Chief of Staff of the Air Force approved a new plan for logistics support of new weapon systems: the System Support Concept. Recognizing that ICS had become an ingredient in virtually every acquisition program, better ways to manage and control that option were needed. Air Force Logistics Command (AFLC) and Air Force Systems Command (AFSC) explored the issue and

developed the System Support Concept. This concept ensures that a new system is supportable when the government assumes organic support responsibility (1:29).

AFLC Commander Policy. The AFLC Commander points out that ICS is much more expensive than the cost of organic support. Furthermore, he notes that ICS drains the limited AFLC peacetime resources. However, the use of ICS has been allowed because of the "perceived need" to have 100% technical data and support equipment before declaring organic capability. His policy encourages innovative practices and smart "work-arounds" to permit early depot-level maintenance activation in support of the new weapon system. He directs the purchase of depot-level support equipment as early as possible in the life-cycle of a new weapon system, and follow-on action to rectify any "work-arounds" used (6:1). This commander views organic capability as a major contributor to flexibility in peacetime and absolutely essential to Air Force surge capability during war. The objectives he set for AFLC include achieving organic capability by IOC with new systems (8:143).

AFSC Commander Policy. AFSC is also committed to providing the using commands with fully supported weapon systems. The commander's policy rules out any future occurrence of past tradeoffs that set the weapon system in the field without adequate or carefully planned logistics support. The commander directs the program director to make

every effort to have the program fully supported, but, in those instances where it cannot be done, develop options with the using and supporting commands to best support the system. His ultimate goal is to field weapon systems without any ICS funding. He directs the use of acquisition strategies that provide incentives for the contractor to deliver organic capability to the Air Force at the earliest possible date. Overall, the goal must be to eliminate, or at least reduce the Air Force dependence on ICS (5:1).

Concept Description. The System Support/Early Depot Activation (SS/EDA) concept is designed to provide faster, better, and more cost effective organic logistics support. Presently, funding for depot-level maintenance support resources takes place at the end of the production portion of an acquisition program. Under SS/EDA, the depot-level maintenance support resources would be funded at the beginning of the acquisition process, reducing the "window of ICS." AFSC, AFLC, and the using command agree upon the date when sufficient quantities of equipment, trained personnel, and logistics elements would have to be available to conduct logistics support trials of the new weapon system. This is the Required Asset Availability (RAA) Date. Beginning with this date, support capability is demonstrated through a process known as System Support Verification (SSV). Later, prior to the weapon system IOC date, there will be an established Initial Operational Capability/Support Milestone (IOC/SM). The contractor now

will have the incentive to deliver all the elements of needed logistics support to meet the SSV. Otherwise, at the IOC/SM, the contractor assumes responsibility for repairs if organic repair capability is not established due to his failure to deliver the required support resources. AFLC's target is to have organic capability by the IOC/SM date (8:10-11).

The SS/EDA concept goals are to minimize ICS use due to late delivery of support resources, accelerate organic support at the depot level, and strengthen the systems engineering process by closely analyzing supportability and training. ICS may still be required because of such issues as depot workload, lack of sufficient Air Force personnel to train, etc., but not because of the failure of the contractor to deliver required support resources. This concept links weapon system delivery with specific elements of support capability. These assets must be delivered by the RAA date, or the SSV may not be completed, and the contractor will assume responsibility for the system support at the IOC/SM date (8:13-14).

Budgeting and Funds

Funds. ICS is funded from the AFLC operations and maintenance account (3400 appropriations). Under the SS/EDA concept, ICS funding should be considered Preoperational Support and funded from either research and development

(3600 appropriations) or production (3080 appropriations) accounts. Support required after IOC due to no fault of the contractor should be borne by the using command or AFLC operations and maintenance accounts (8:20).

Budget. While the SS/EDA concept should drive the estimate for ICS to zero, some programs will still use varying degrees of ICS. Herein lies the problem: how to develop an ICS estimate. No data base exists to serve as the source data for developing an ICS estimate. Under SS/EDA, the budget estimate should be developed through a bottom-up methodology, starting with an analysis of the program milestones and the basic funding. Through this initial analysis, the depot support equipment delivery dates should be determined. The expected time frame for support should now be known, and the weapon system equipment can be analyzed (8:113-114).

Presently, the program manager does not have any formula/model for predicting ICS costs (8:113).

Conclusion

The use of interim contractor support is a logistics support option available to the program manager in the acquisition of new weapon systems. Most authorities agree that this is an expensive option. However, it does reduce the risk to the Air Force in situations where the design of

either the weapon system or the support resources is unstable.

ICS can be used at any of the three levels of Air Force maintenance. Most often, it is used for intermediate and depot level support. When used, ICS gives the using command operational capability while organic logistics support capability is being developed. However, its contribution to combat capability is questionable. The Air Force's projected future requirements make ICS an unlikely prospect in future weapon system deployments.

The System Support/Early Depot Activation concept is being endorsed by both the AFSC and the AFLC commanders. Both want organic capability to be a priority in future acquisition programs. This new concept directs the procurement of support resources at the beginning rather than the end of the production phase of the acquisition process. This new concept also gives the contractor more incentive to deliver the support resources to the government: any delays on his behalf and he will be responsible for the weapon system support after a pre-determined, agreed upon date.

Funding for ICS presently comes from the AFLC operations and maintenance account. Under the SS/EDA concept, funding will not be necessary unless some Air Force organization fails, through its own actions, to achieve organic capability. In this case, the parent command for

the organization that failed to gain the required capability will fund the necessary ICS program.

Budgeting also will not be a problem once the SS/EDA concept is implemented in all programs. However, until that time, the program manager needs some device in the form of a formula, model, or analysis of past ICS data to estimate ICS costs. Presently, none exists.

III. Methodology

Introduction

This chapter outlines the methodology to solve the research questions posed in chapter one. This study will be a case analysis on interim contractor support (ICS) in the B-1B and the F-16 programs. These two programs are typical of the complexities in the acquisition of modern weapon systems and both use some degree of ICS for logistics support. They represent current technologies and demonstrate the difficulty in achieving organic capability.

The terms Federal Supply Class and Federal Stock Class will be referred to repeatedly throughout the remainder of this study. These terms are synonymous.

Data Gathering

Interim Contractor Support is not a new concept; it has been used for many years during various weapon system acquisition efforts. Therefore, data should be available detailing what actions have occurred and the costs of those actions. Requests will be made to Oklahoma City Air Logistics Center for the B-1B program and Ogden Air Logistics Center for the F-16 program asking for reports on ICS expenses for each of those programs on a fiscal year basis. Emphasized in the request will be the need for

National Stock Number identification of the items repaired, the frequency of demand, and the cost of the repairs.

Data population. This study defines each Federal Stock Class (FSC) within each aircraft program as a distinct data population.

Data sample. Samples will be drawn from the supplied data within each FSC and each weapon system. If the requested reports are given, fiscal year 1988 ICS expenses in each FSC by weapon system program will serve as the data sample.

Sorting the data. The items repaired under ICS contract are government owned assets; therefore, they fall under the Federal Catalog System and are identified by a National Stock Number (NSN). This NSN is a series of 13 digits to individually identify an items in the Federal Supply Catalog. Within the NSN, the first four numbers identify the FSC for the particular item. This FSC is a family of similar functioning items. For example, FSC 6605 identifies all items in the Federal Catalog System that belong to the "Navigational Instruments" family. There are 652 Federal Supply Classes listed in the system (9:33). Sorting and studying the data by FSC can enlighten managers on general areas to focus early organic capability development in future programs.

An extracted database will be created from the reports supplied by the Air Logistics Centers. Included in this extracted database will be the FSC, the NSN, the item Part

Number, and the Repair Cost for each item repaired under the respective ICS contract. After the database is fully constructed, it will be sorted by FSC to accomodate the data analysis.

Analyzing the Data

Data Description. Once the data are grouped by Federal Supply Classes, the data description begins. The data will be arrayed numerically and graphically to determine the relative frequency and cost of the repairs. Numerical description will include the mean, variance, and standard deviation of each FSC.

Data Analysis. The data will be analyzed to determine which FSCs generate the greatest demand and the greatest costs for ICS.

Pareto Analysis. According to Joseph M. Juran, the Pareto Principle identifies the "vital few projects." He states that "a 'vital few' contributors to a problem account for most of the total size of the problem. The remaining contributors (the 'trivial many') account for a small part of the total problem" (13:101). The FSCs in this study will be analyzed with this principle in mind. Do 20% of the FSCs account for 80% of the cost? Do 20% of the FSCs account for 80% of the frequency of demand for ICS repair? Are the FSCs that make up the bulk of the cost the same FSCs that make the bulk of the frequency of demand? Should the

Pareto Principle apply to the FSCs in this study, those FSCs that make up the "vital few" contributors will be the focus of further analysis.

Statistical Inferences. The analysis of the FSCs will continue with some comparisons to determine their similarities and their differences. This analysis will be completed through the SAS software on the AFIT mainframe computer.

The analysis of variance procedures will be used and will include the Ryan-Einot-Gabriel-Welsch Multiple F (REGWF) test. The REGWF test is a multi-stage test that tests the differences in all sample means, and then begins checking for individual differences through paired comparisons. The outcome is not only that the means are the same or different, but which means differ from which others (15:239).

When performing an analysis of variance on data such as this, there are two types of control or risk factor the researcher must choose between. One is the comparisonwise error rate, or the risk of making the wrong decision concerning an individual comparison between two or more groups. The other type of control or risk factor is the experimentwise error rate, or the risk of making a wrong decision for all the comparisons (15:232).

The REGWF test controls the experimentwise error rate and this test will be run with a risk factor (alpha value) of .05.

Conclusion

This study will use the ICS spending by Federal Supply Class in both the F-16 and the B-1B programs. The data will be gathered by requesting reports from the appropriate Air Logistics Centers on the most recently completed fiscal year's ICS spending. Each FSC within each aircraft program will serve as the data population for this study and the data supplied in the reports, by FSC, will serve as the data sample.

Extracts will be taken from the reports to form the database for this research effort. The data will be sorted by FSC and presented numerically and graphically.

The data analysis will include a Pareto Analysis to determine if a relatively few classes contribute the most to the demand and the cost of ICS repair. Finally, the data analysis will conclude with multiple comparison procedures performed on the AFIT mainframe computer, using SAS software. The comparisons will be done with experimentwise error rate control with a risk factor of .05.

IV. Data Analysis

Introduction

This chapter details the actual data analysis for the gathered data in order to solve the research questions presented in chapter one. The methodology explained in chapter three will be followed as closely as possible and any deviations to the planned methodology will be explained.

Data Gathered

Reports were requested from Oklahoma City and Ogden Air Logistics Centers for the B-1B and the F-16 programs, respectively. Interim contractor support (ICS) expenses per fiscal year, listed by National Stock Number(NSN), Part Number, and Cost, were requested. Oklahoma City responded with detailed reports on B-1B program ICS activity since the program initiation in Fiscal Year 1986. They included a sample of activity with associated costs for 43 Federal Supply Classes (FSCs) in Fiscal Year 1988. These expenses were for the FY 88 expenses for repairs under their contract with Rockwell International. The B-1B program makes extensive use of interim contractor support with at least three contractors. While the Rockwell contract costs are included, the costs for the contracts with other contractors such as the Boeing Company and Eaton AIL are not included; therefore, the samples used for this study will be

representative of FSCs repaired under the Rockwell contract (17:1-155).

Besides contracting ICS with several companies, the B-1B program managers use ICS for repairs at both the intermediate- and depot-maintenance levels (17:1-155). This researcher was unable to fully determine the extent of ICS repairs (what maintenance levels are involved) in the F-16 program.

Ogden Air Logistics Center provided a report detailing 25 items in three different FSCs. However, cost data was unavailable (16:1-3). Therefore, only limited comparisons can be made between the two weapon system programs.

Data population. The data populations are each FSC within each aircraft program.

Data sample. Based on the information received, the data sample for the B-1B program will be the ICS expenses and demand frequency by FSC for Fiscal Year 1988. The F-16 data sample will be limited to demand frequency.

Sorting the data. The B-1B and F-16 reports provide sufficient information to extract a database for this research effort. This database includes the FSC, the NSN, the Part Number, and the Repair Cost (B-1B) for items repaired under ICS. Appendix A contains the extracted database for the B-1B data and Appendix B contains the information received on the F-16 program. The titles of the respective FSCs, as defined in the DOD Standardization Directory, are included in Appendix C to this document.

After extracting the data from the supplied reports, the database was sorted by FSC in each aircraft program.

Analyzing the Data

Data Analysis.

Pareto Analysis. Pareto Analysis was performed on the sorted data in each aircraft program. However, the F-16 data, lacking any cost information, could only be analyzed for relative frequency and cumulative relative frequency of demand for ICS repair.

The F-16 data contains only demand data in three FSCs. Table 4-1 gives the numerical description of this data and Figure 4-1 presents the data graphically.

Table 4-1

F-16 ICS Demand Summary
(FY88) (16:1-3)

	FSC	FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE RELATIVE FREQUENCY
1	1270	455	58.7%	58.7%
2	5999	309	39.9%	98.6%
3	1240	11	1.4%	100.0%

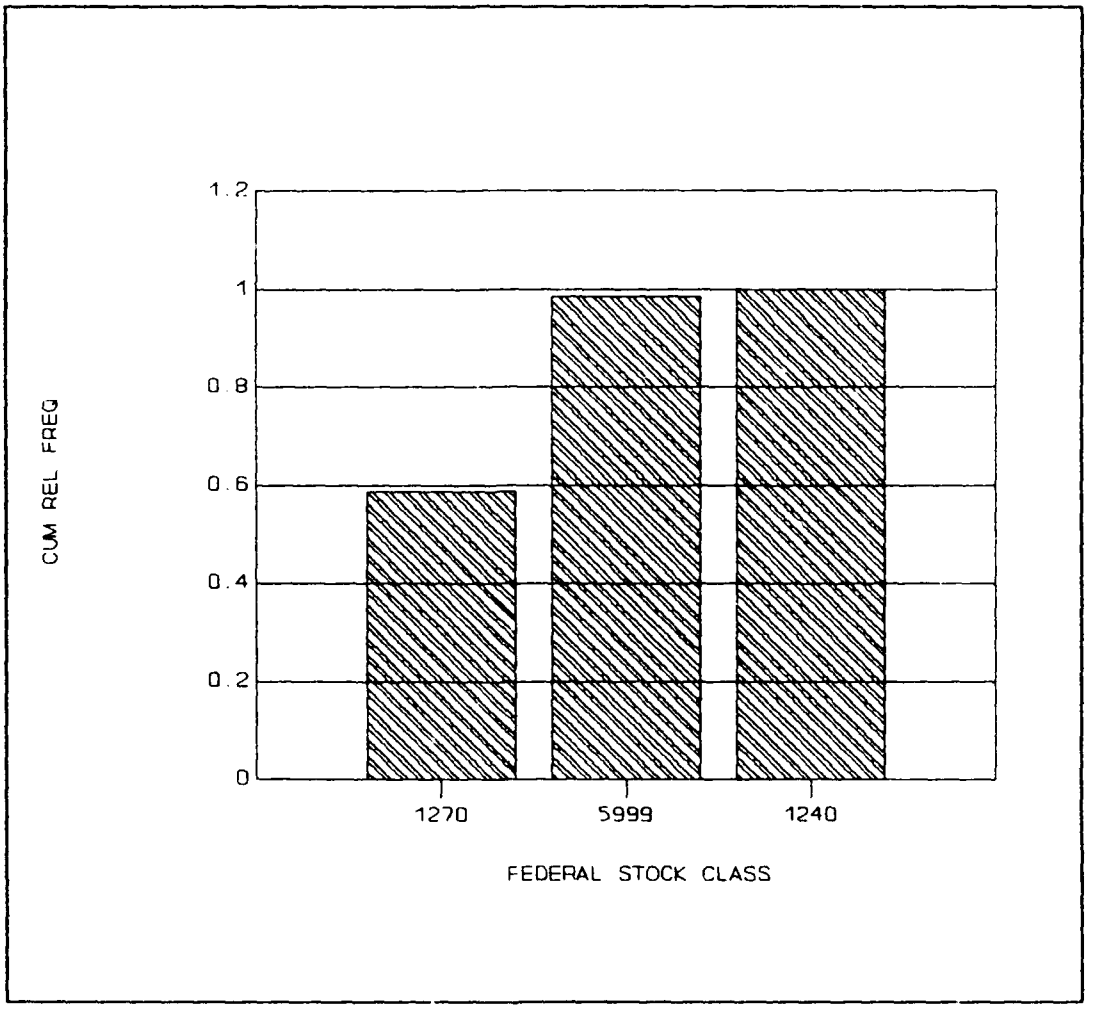

Figure 4-1

Cumulative Relative Frequency for F-16 ICS
Demand in FY 88 by FSC (16:1-3)

As shown in Figure 4-1, two of the three classes, 66% of the sample, account for 98% of the demand for ICS in the F-16 program.

The B-1B data points are presented numerically in Table 4-2, sorted by total cost, and Table 4-3, sorted by demand frequency within FSCs. Graphical display of these data follows in Figures 4-2 and 4-3.

Table 4-2

B-1B ICS Expenses (by Total Cost) for FY88
with Rockwell International Corp. (17:1-155)

	FSC	TOTAL COST	FREQ	% of COST	CUM % COST
1	2835	$976,654.00	73	23.0%	23.0%
2	6610	$659,827.00	293	15.5%	38.5%
3	1650	$347,543.00	167	8.2%	46.6%
4	1660	$299,395.00	119	7.0%	53.7%
5	6615	$265,936.00	121	6.3%	59.9%
6	6605	$265,936.00	9	6.3%	66.2%
7	6115	$244,795.00	71	5.8%	71.9%
8	1680	$234,596.00	196	5.5%	77.4%
9	4320	$226,140.00	28	5.3%	82.8%
10	2995	$148,909.00	63	3.5%	86.3%
11	6110	$ 85,385.00	59	2.0%	88.3%
12	4810	$ 47,676.00	23	1.1%	89.4%
13	1560	$ 45,110.00	27	1.1%	90.5%
14	5999	$ 40,632.00	20	1.0%	91.4%
15	2990	$ 37,603.00	10	0.9%	92.3%
16	3010	$ 37,500.00	11	0.9%	93.2%
17	2915	$ 35,603.00	26	0.8%	94.0%
18	6685	$ 32,353.00	45	0.8%	94.8%
19	6620	$ 28,576.00	21	0.7%	95.4%
20	5831	$ 27,804.00	60	0.7%	96.1%
21	6680	$ 25,498.00	25	0.6%	96.7%
22	5930	$ 21,447.00	20	0.5%	97.2%
23	4820	$ 17,849.00	15	0.4%	97.6%
24	6130	$ 17,243.00	7	0.4%	98.0%
25	3040	$ 17,000.00	1	0.4%	98.4%
26	5960	$ 16,038.00	12	0 4%	98.8%
27	1630	$ 14,380.00	40	0.3%	99.1%
28	4920	$ 10,835.00	32	0.3%	99.4%
29	6105	$ 7,200.00	3	0.2%	99.6%
30	6340	$ 4,158.00	7	0.1%	99.7%
31	7025	$ 4,054.00	5	0.1%	99.8%
32	5945	$ 2,423.00	8	0.1%	99.8%
33	6220	$ 1,547.00	2	0.0%	99.8%
34	2910	$ 1,456.00	2	0.0%	99.9%
35	5963	$ 1,400.00	1	0.0%	99.9%
36	5985	$ 948.00	2	0.0%	99.9%
37	5990	$ 726.00	1	0.0%	100.0%
38	4730	$ 660.00	1	0.0%	100.0%
39	5915	$ 400.00	1	0.0%	100.0%
40	5836	$ 310.00	1	0.0%	100.0%
41	1620	$ 240.00	2	0.0%	100.0%
42	5935	$ 225.00	1	0.0%	100.0%
43	6140	$ 157.00	1	0.0%	100.0%

Table 4-3
B-1B ICS Expenses (by Demand Frequency) for FY88
w.:n Rockwell International Corp. (17:1-155)

	FSC	FREQ	% of FREQ	CUM % FREQ
1	6610	293	18.0%	18.0%
2	1680	196	12.0%	30.0%
3	1650	166	10.2%	40.2%
4	6615	121	7.4%	47.6%
5	1660	119	7.3%	54.9%
6	2835	73	4.5%	59.4%
7	6115	71	4.4%	63.7%
8	2995	63	3.9%	67.6%
9	5831	60	3.7%	71.2%
10	6110	59	3.6%	74.9%
11	6685	45	2.8%	77.6%
12	1630	40	2.5%	80.1%
13	4920	32	2.0%	82.0%
14	4320	28	1.7%	83.8%
15	1560	27	1.7%	85.4%
16	2915	26	1.6%	87.0%
17	6680	25	1.5%	88.5%
18	4810	23	1.4%	89.9%
19	6620	21	1.3%	91.2%
20	5999	20	1.2%	92.5%
21	5930	20	1.2%	93.7%
22	4820	15	0.9%	94.6%
23	5960	12	0.7%	95.3%
24	3010	11	0.7%	96.0%
25	2990	10	0.6%	96.6%
26	6605	9	0.6%	97.2%
27	5945	8	0.5%	97.7%
28	6340	7	0.4%	98.1%
29	6130	7	0.4%	98.5%
30	7025	5	0.3%	98.8%
31	6105	3	0.2%	99.0%
32	1620	2	0.1%	99.1%
33	2910	2	0.1%	99.3%
34	6220	2	0.1%	99.4%
35	5985	2	0.1%	99.5%
36	5963	1	0.1%	99.6%
37	5836	1	0.1%	99.6%
38	6140	1	0.1%	99.7%
39	4730	1	0.1%	99.8%
40	5935	1	0.1%	99.8%
41	3040	1	0.1%	99.9%
42	5990	1	0.1%	99.9%
43	5915	1	0.1%	100.0%

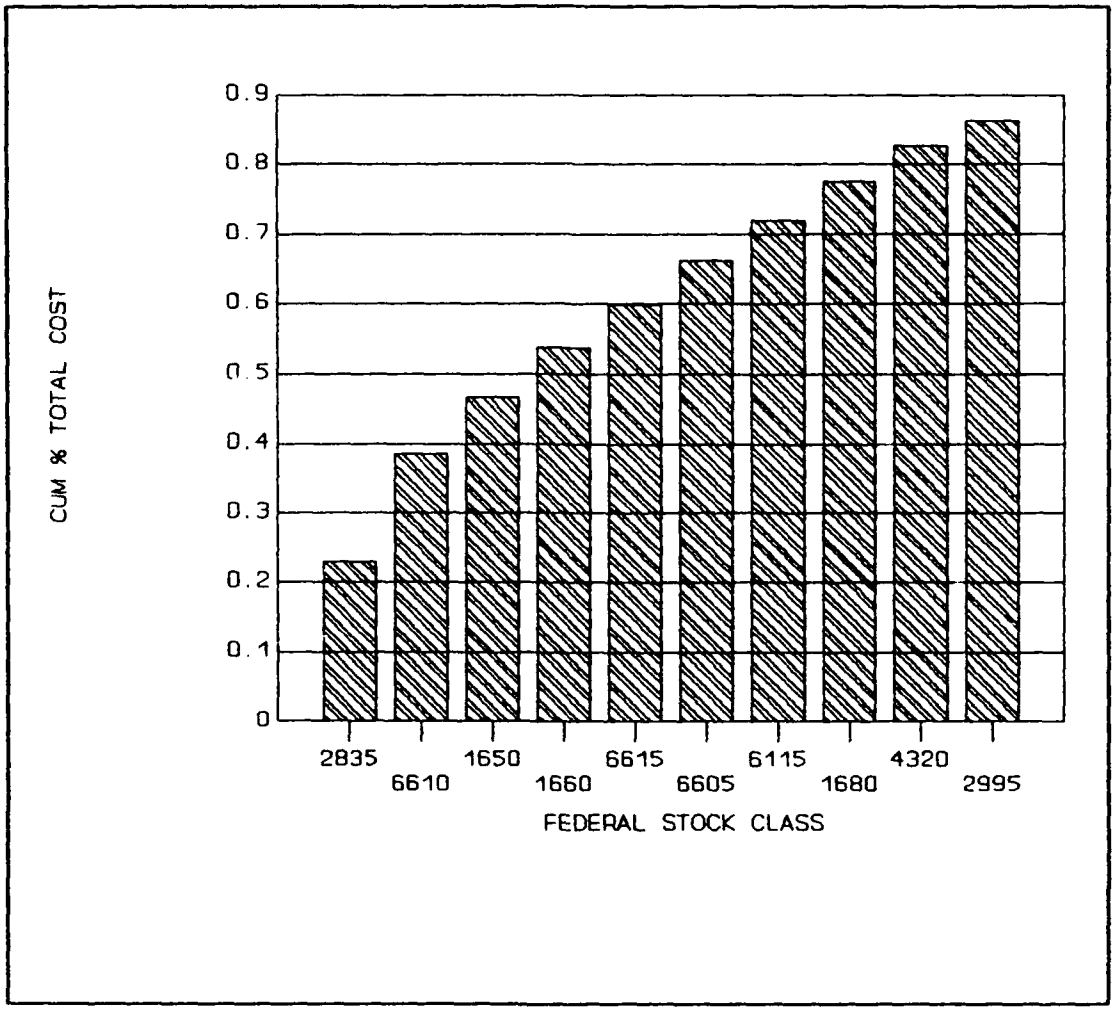

Figure 4-2

Cumulative Relative Percent of Total Cost
for B-1B ICS Repairs with Rockwell International
Corp. in Fiscal Year 1988 (17:1-155)

As shown in Figure 4-2 and Table 4-2, ten of the FSCs consumed 86.3% of the total expenses with the Rockwell contract in Fiscal Year 1988. The demand data, shown below, displays a similar pattern. These data comprising the bulk of the expenditures and demands will form the basis for the remainder of the analysis.

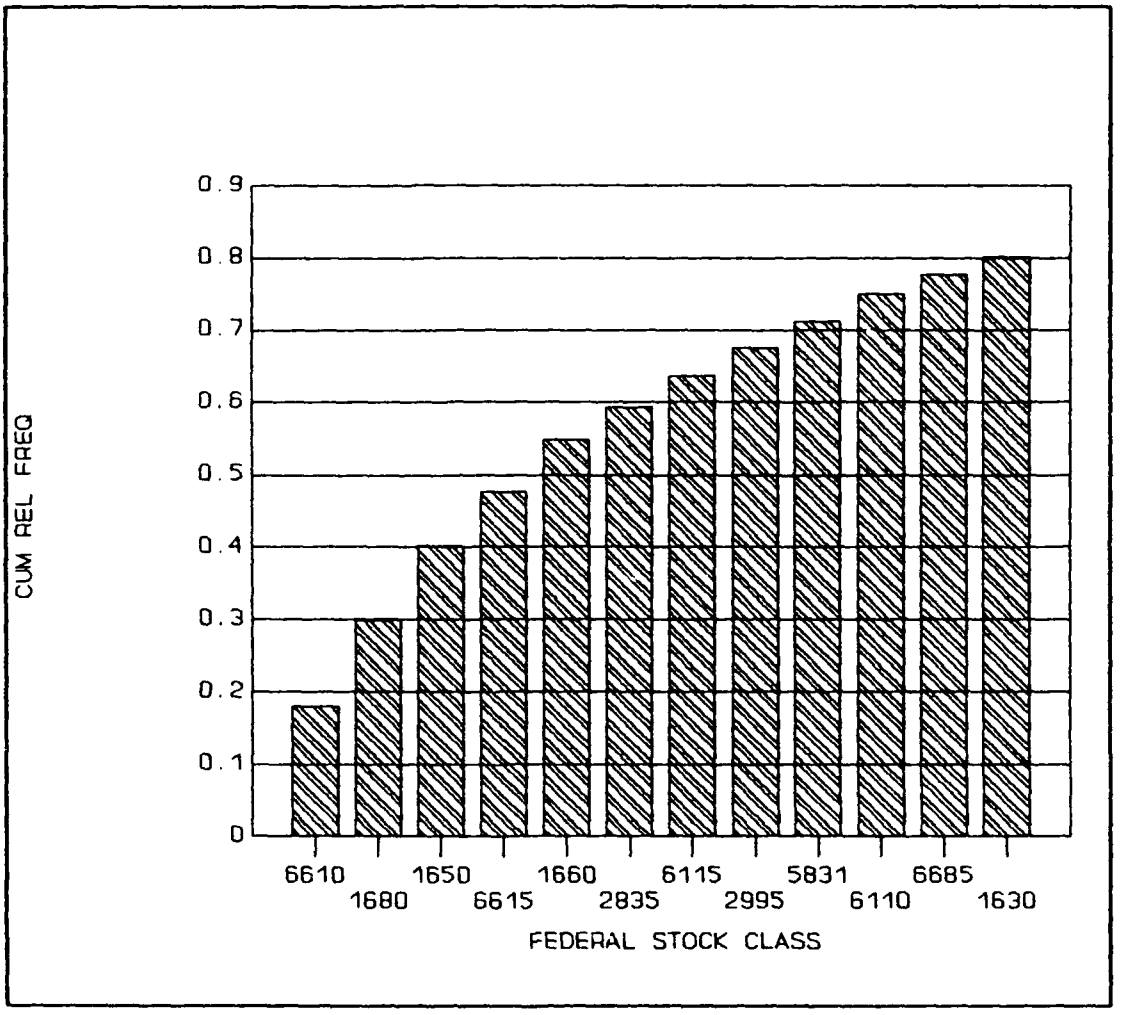

Figure 4-3

Cumulative Relative Frequency of Demand for B-1B ICS Repairs with Rockwell International Corp. in Fiscal Year 1988 (17:1-155)

Table 4-3 and Figure 4-3 show that 12 of the FSCs account for 80.1% of the total frequency in Fiscal Year 1988 for ICS repair with Rockwell.

The Pareto Analysis does hold true for the B-1B ICS data. 23% of the FSCs account for 86.3% of the total cost. Likewise, 28% of the FSCs account for 80% of the demand

frequency. These FSCs comprise the "vital few" contributors and will be the focus of the continuing analysis.

Table 4-4 shows a comparison of these "vital few" FSCs for both the B-1B and the F-16 programs.

Table 4-4

Comparison of FSCs with Highest Percentages of Demand and Total Cost

	B-1B		F-16
FSC	COST	DEMAND	DEMAND
1270			X
1630		X	
1650	X	X	
1660	X	X	
1680	X	X	
2835	X	X	
2995	X	X	
4320	X		
5831		X	
5999			X
6110		X	
6115	X	X	
6605	X		
6610	X	X	
6615	X	X	
6685		X	

FSC Statistics. Table 4-5 displays the mean, variance, and standard deviation for those B-1B FSCs comprising more than 80% of the total ICS cost with the Rockwell contractor in Fiscal Year 1988. The SAS program written for this data and the output products are included

in Appendix D with additional statistical information on those classes.

Table 4-5

Mean, Variance, and Standard Deviation for B-1B FSCs Comprising More Than 80% of Total Cost with Rockwell International Corp. in FY 88

FSC	MEAN	VARIANCE	STANDARD DEVIATION
1650	$ 2081.10	$ 6966692.00	$ 2639.45
1660	$ 2515.92	$ 8842884.00	$ 2973.70
1680	$ 1196.92	$ 1803047.00	$ 1342.78
2835	$ 13559.10	$ 447685715.00	$ 21158.60
2995	$ 2363.63	$ 2126296.00	$ 1458.18
4320	$ 8076.43	$ 51393330.00	$ 7168.91
6115	$ 3447.82	$ 14765129.00	$ 3842.54
6605	$ 2704.11	$ 587330.00	$ 766.37
6610	$ 2251.97	$ 7093528.00	$ 2663.37
6615	$ 2197.82	$ 503610.	$ 709.66

Statistical Analysis. An analysis of variance procedure was performed on the mean cost for those ten FSCs comprising the bulk of the total B-1B ICS cost. This procedure, the Ryan-Einot-Gabriel-Welsch Multiple F (REGWF) test, was performed in the AFIT mainframe computer using the SAS software (15:239). The SAS program and output products for this procedure are included in Appendix D.

The REGWF test procedure tests the following null hypothesis against the alternative hypothesis:

Ho: the means of the ten FSCs are not significantly different from one another.

Ha: at least one of the ten means differs significantly (statistically) from the others.

Risk: test at an alpha (risk) value of .05.

As discussed in Chapter III, this test controls the experimentwise error rate. With the alpha value set at .05, this translates to accepting a 5% risk of making the wrong decision, i.e., the means are different if in fact they were not (15:232).

The REGWF test procedure tests the means of the FSCs as a group and then begins comparing the group means using n, n-1, n-2, n-3 groups, etc. This multi-stage test not only determines similarities or differences, but also determines which means are similar or different from which others (15:239).

Table 4-6 contains an extract from the REGWF procedure output. Groups with the same letter in the "Grouping" column are not significantly different statistically from one another. The output shows there is a statistically significant difference between FSC 2835 and all the other groups; likewise, FSC 4320 is significantly different statistically from all the other groups. But the remaining other eight FSCs display no statistically significant difference from one another. Further conclusions will be documented in Chapter V.

Table 4-6

Ryan-Einot-Gabriel-Welsch Multiple F
(REGWF) Test Results for B-1B Cost Data

FSC	MEAN	GROUPING
2835	13559	A
4320	8076	B
6115	3448	C
6605	2704	C
1660	2516	C
2995	2364	C
6610	2252	C
6615	2198	C
1650	2081	C
1680	1197	C

Conclusion

The research methodology planned for this study was successful. Although comparisons between weapon systems would have increased the value of this research, the lack of cost information on the F-16 ICS program did not significantly limit this study.

The B-1B ICS program data, although only representative of ICS expenses with one of multiple contractors, did allow for the range of statistical analyses planned in Chapter III. The Pareto Analysis was conducted and did result in identification of a significant few Federal Stock Classes that account for the bulk of the total expenses. Numerical and graphical description of the data were accomplished, as

well as an analysis of variance multiple comparison procedure, the Ryan-Einot-Gabriel-Welsch Multiple F test.

The results of these analyses are documented in Chapter V.

V. Conclusions/Recommendations

Introduction

This chapter documents the conclusions reached from the analysis of data. The investigative questions from Chapter I will also be answered. The conclusion to this chapter will include appropriate recommendations for further research or action.

Interim Contractor Support Case Studies

Differences in F-16 and B-1B ICS. Differences between the use of Interim Contractor Support (ICS) in the F-16 and B-1B programs are obvious from the data. The B-1B data included references to at least three contractors with documented instances of intermediate- and depot level maintenance repairs to spare parts. The F-16 data suggests that either 1) the F-16 program limits ICS to only one of the two maintenance levels or 2) the aircraft program is capable of organic maintenance support. Again, cost data for the F-16 ICS repairs was not available for this study.

In the samples used for this study, only one Federal Supply Class was common to the two weapon systems. This class, FSC 5999, Miscellaneous Electrical and Electronic Components, significantly differed between the two programs. The frequency of ICS repair in this class for the F-16 was 39.9% of the total frequency of ICS repair in the sample.

On the other hand, the same class in the B-1B program 1.2% of the total frequency of ICS repair. Due to the lack of cost data for the F-16, there is no cost comparison for this class.

Pareto Analysis. The small sample in the F-16 data was insufficient to make any determinations. Two of the three FSCs in the sample represent 98% of the demand. These two classes are FSC 1270, Aircraft Gunnery Fire Control Components, and FSC 5999, Miscellaneous Electrical and Electronic Components.

The data from the B-1B ICS program was sufficient to perform the Pareto Analysis. The data exhibits the behavior modeled by the Pareto Analysis--ten of the Federal Supply Classes (23% of the sample classes) represent 86.3% of the total expenses in Fiscal Year 1988 for ICS repair under the Rockwell contract. Similarly, 12 of the classes (28% of the sample classes) account for 80.1% of the total demand for ICS repair under this contract. Pareto's 80/20 rule applies to this data.

Eight of the FSCs (19% of the sample classes) were in both the high demand and high cost categories. This comparison is documented in Table 4-4.

Federal Stock Class Statistics. Table 4-5 shows the mean, variance and standard deviation for the B-1B "vital few" contributors to the total cost. FSC 2835, Gas Turbines and Jet Engines, has the largest mean and variance. This is logical due to the fact there are four times as many engines

as there are aircraft. The second largest consumer group in the data is FSC 4320, Power and Hand Pumps.

Analysis of Variance. The Ryan-Einot-Gabriel-Welsch Multiple F (REGWF) test was completed as part of the analysis in Chapter IV. The conclusion of this test is to reject the null hypothesis in favor of the alternate hypothesis that at least one of the means differs significantly from the others. In fact, two of the means are different from all others in the group. The mean value for FSC 2835, Gas Turbines and Jet Engines, statistically is significantly different from all the other classes in the sample. Another class, FSC 4320, Power and Hand Pumps, is also significantly different (statistically) from all the other classes. Table 5-1 shows the FSC and Class Title for the remaining classes that exhibit statistically similar mean values.

Table 5-1

FSCs with Statistically Similar Means

FSC	TITLE
6115	Generators, Electrical
6605	Navigational Instruments
1660	Air Conditioning, Heating, and Press
2995	Engine Accessories
6610	Flight Instruments
6615	Autopilot and Gyro Components
1650	Hydraulic, Vacuum, and Deicing Components
1680	Aircraft Accessories and Components

Conclusions for Investigative Questions

The investigative questions stated in Chapter I are repeated here with conclusions from this research effort.

Question 1. What items do the contractors repair most frequently? Using the B-1B data, FSC 6610, Flight Instruments has the highest demand for ICS repair, followed by FSCs 1680 (Miscellaneous Aircraft Accessories and Components), 1650 (Hydraulic, Vacuum, and Deicing Components), 6615 (Autopilot and Gyro Components), 1660 (Air Conditioning, Heating, and Pressurization), 2995 (Miscellaneous Engine Accessories), 5831 (Intercom and Airborne Public Address Systems), 6110 (Electrical Control Equipment), 6685 (Pressure, Temperature, and Humidity Measuring and Control Instruments) and 1630 (Aircraft Wheel and Brake Systems). The remaining 31 FSCs account for only 19.9% of the total demand.

The small F-16 sample allows little confidence in inferences concerning the data. The sample data showed high demand in FSCs 1270 (Aircraft Gunnery and Fire Control Components) and 5999 (Miscellaneous Electrical and Electronic Components). These two FSCs represent over 98% of the total demand exhibited in the sample data.

Question 2. Can these items be grouped by Federal Supply Classes? Yes, both the B-1B and the F-16 sample data had sufficient identifying information to group them by Federal Supply Class. The B-1B sample contained more than

1600 transaction records belonging to 43 different Federal Supply Classes. The F-16 sample contained 25 transactions in three different Federal Supply Classes.

Question 3. What are the costs associated with these items/classes? Table 4-2 on page 4-5 contains the total costs per Federal Supply Class for the items in the B-1B sample. The costs for the F-16 items were unavailable.

Question 4. Are the items/classes the same or different in different weapon system programs? According to the sample data, the only class common to both the F-16 and B-1B program is FSC 5999 (Miscellaneous Electrical and Electronic Components). While the nomenclature is the same, the demand behavior is different in each program (see discussion on page 5-1).

Question 5. What are the descriptive statistics for the various items/classes? Table 4-5 or Page 4-10 contains the descriptive statistics for the cost data in the B-1B sample.

Question 6. What actions can the Air Force take to reduce the time frame for paying these costs? The System Support/Early Depot Activation Concept discussed in Chapter II should provide the Air Force with earlier organic maintenance capability in those programs where it is used. It is assumed that early depot activation also means early intermediate-level maintenance capability to further reduce expenditures through ICS.

Other actions the Air Force can take to reduce the time frame for paying ICS costs is to analyze the organic maintenance capability for the Federal Stock Classes under consideration. Does any capability exist to repair items in FSC XXXX? If there is capability within the FSC, what actions are needed to gain the capability to repair the specific piece of equipment?

Conclusions About Specific Problem

The specific problem identified in Chapter I was to determine what categories of items contribute the most cost and the highest demand for repair to interim contractor support in the weapon system acquisition process. Using a sample of 43 Federal Supply Classes from the B-1B ICS program and three Federal Supply Classes from the F-16 ICS program, this study has shown some of the categories that contribute significantly to the cost and demand for ICS repair.

Recommendations

This study should be disseminated to weapon system program managers in Air Force System Command, Air Force Logistics Command, and those operating commands with maintenance support provided through ICS contracts.

Additionally, this study should be replicated in a longitudinal manner to determine trends over time. The data

from this study is included in Appendices A and B. A study of similar data for Fiscal Year 1989 could shed even more light on this subject.

Another area for potential research would be the organic maintenance capability possessed by each Air Logistics Center. Given an analysis such as this, then determinations could be made to the capability or limiting factors for maintaining new items.

Appendix A: Fiscal Year 1988 B-1B ICS Expenses with Rockwell International Corporation (17:1-155)

FSC	NSN	PART NUMBER	REPAIR COST
1560	1560012577225	L3052017-011	11800
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	1350
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	670
1560	1560011478347	2760046-102	795
1560	1560011478347	2760046-102	795
1560	1560011478347	2760046-102	795
1560	1560011478347	2760046-102	795
1560	1560011478347	2760046-102	795
1560	1560012640435	473025-0211	800
1560	1560RR9999999	473025-0106	743
1560	1560012640435	473025-0211	750
1560	1560RR9999999	473025-0106	1113
1560	1560RR9999999	473025-106	850
1560	1560012640435	473025-211	800
1560	1560012640435	473025-0211	973
1560	1560RR9999999	473025-0106	1395
1560	1560RR9999999	473025-106	1236
1560	1560RR9999999	473025-106	1643
1560	1560RR9999999	473025-106	1016
1560	1560012640435	473025-211	646
1560	1560011918408	WPE26101130003	6000
1560	1560011909210	WPE26101130004	6000
1620	1620011563935	1881B200	120
1620	1620011563935	1881B200	120
1630	1630011829879	5006648-2	1000
1630	1630011549118	5006640-1	1104
1630	1630011659074	5006636	266
1630	1630011659071	5006632	266
1630	1630011549118	5006640-1	1870
1630	1630011549118	5006640-1	1864
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23

FSC	NSN	PART NUMBER	REPAIR COST
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659315	5006630	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630011659316	5006631	23
1630	1630012524699	039-405-3001-03	1831
1630	1630012524699	039-405-3001-03	1312
1630	1630012456683	042-315-3001-03	500
1630	1630012456683	042-315-3001-03	204
1630	1630012456683	042-315-3001-03	204
1630	1630012456683	042-315-3001-03	204
1630	1630012456686	042-315-3001-03	204
1630	1630012213626	040-829-3020-01	204
1630	1630012524699	039-405-3001-03	206
1630	1630012456683	042-315-3001-03	500
1630	1630012456683	042-315-3001-03	500
1630	1630012456683	042-315-3001-03	500
1630	1630012456683	042-315-3001-03	204
1630	1630012213626	040-829-3020-01	500
1630	1630012456683	042-315-3001-03	500
1650	1650012287226	2046144-2	4000
1650	1650011512258	49950-8	3000
1650	1650011678744	AH2026-07	413
1650	1650011678744	AH2026-07	484
1650	1650011678744	AH2026-07	530
1650	1650011678744	AH2026-07	793
1650	1650011678744	AH2026-07	342
1650	1650011911601	L5877500-111	570
1650	1650011649097	L5871600-021	766
1650	1650011883620	3820020-104	2000
1650	1650011883620	3820020-104	2000
1650	1650011894317	3820018-102	318
1650	1650011482012	3830052-101	345
1650	1650011482012	3830052-101	345
1650	1650012225730	3830053-101	345
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1650	1650012251820	L5875400-032	345
1650	1650011482012	3830052-101	345
1650	1650012225730	3830053-101	345
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1650	1650012225730	3830053-101	345
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1650	1650012225730	3830053-101	345
1650	1650012225730	3830053-101	345
1650	1650011482119	47-3008-1	1817
1650	1650011482119	47-3008-1	1643
1650	1650011482119	47-3008-1	823
1650	1650011482119	47-3008-1	745
1650	1650011482119	47-3008-1	832
1650	1650011482119	47-3008-1	2822
1650	1650011482119	47-3008-1	881
1650	1650011482119	47-3008-1	2290
1650	1650011482119	47-3008-1	1558
1650	1650011482119	47-3008-1	50
1650	1650011482119	47-3008-1	868
1650	1650011527304	NF53100-03B	9678
1650	1650011527304	NF53100-03B	15000
1650	1650011527304	NF53100-03B	423
1650	1650011527304	NF53100-03B	14000
1650	1650RR9999999	NF203648-2	11177
1650	1650011527304	NF53100-03B	5300
1650	1650011527304	NF53100-03B	15000
1650	1650011482013	50010-10	403
1650	1650011482014	50010-11	2096
1650	1650011512258	49950-8	2216
1650	1650011482011	49950-9	2578
1650	1650011482014	50010-11	1764
1650	1650011439999	5003418-12	4690
1650	1650012100001	718534	1800
1650	1650012108535	736186-A	1800
1650	1650RR9999999	5003418-12	2305
1650	1650011482109	712645F	1800
1650	1650012099993	713343B	1800
1650	1650012108537	713516A	1800
1650	1650012100001	718534	1800
1650	1650012100001	718534	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650012100001	718534	1928
1650	1650012095072	714178	146
1650	1650011482109	712645F	1800

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1650	1650012225730	3830053-101	345
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1650	1650011482119	47-3008-1	1817
1650	1650011482119	47-3008-1	1643
1650	1650011482119	47-3008-1	823
1650	1650011482119	47-3008-1	745
1650	1650011482119	47-3008-1	832
1650	1650011482119	47-3008-1	2822
1650	1650011482119	47-3008-1	881
1650	1650011482119	47-3008-1	2290
1650	1650011482119	47-3008-1	1558
1650	1650011482119	47-3008-1	50
1650	1650011482119	47-3008-1	868
1650	1650011527304	NF53100-03B	9678
1650	1650011527304	NF53100-03B	15000
1650	1650011527304	NF53100-03B	423
1650	1650011527304	NF53100-03B	14000
1650	1650RR9999999	NF203648-2	11177
1650	1650011527304	NF53100-03B	5300
1650	1650011527304	NF53100-03B	15000
1650	1650011482013	50010-10	403
1650	1650011482014	50010-11	2096
1650	1650011512258	49950-8	2216
1650	1650011482011	49950-9	2578
1650	1650011482014	50010-11	1764
1650	1650011439999	5003418-12	4690
1650	1650012100001	718534	1800
1650	1650012108535	736186-A	1800
1650	1650RR9999999	5003418-12	2305
1650	1650011482109	712645F	1800
1650	1650012099993	713343B	1800
1650	1650012108537	713516A	1800
1650	1650012100001	718534	1800
1650	1650012100001	718534	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650012100001	718534	1928
1650	1650012095072	714178	146
1650	1650011482109	712645F	1800

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1650	1650011482109	712645F	2472
1650	1650011482109	712645F	2163
1650	1650011482109	712645F	2460
1650	1650012100001	718534	731
1650	1650012099993	713343B	646
1650	1650012108535	736186A	84
1650	1650012100034	707716A	823
1650	1650012100034	707716A	92
1650	1650012100001	718534	877
1650	1650012099993	713343B	1800
1650	1650012100001	718534	2442
1650	1650011433846	5003418-11	5149
1650	1650011433846	5003418-11	5160
1650	1650011433846	5003418-11	5702
1650	1650011433846	5003418-9	7499
1650	1650012099993	713343B	74
1650	1650012108537	713516A	74
1650	1650012100000	713487	1800
1650	1650011433846	5003418-9	7371
1650	1650RR9999999	5003418-12	7777
1650	1650011482109	712645F	1424
1650	1650011482109	712645F	3406
1650	1650012108535	736186A	910
1650	1650012100001	718534	104
1650	1650RR9999999	5003418-10	7357
1650	1650011482109	712645F	5208
1650	1650012100034	707716A	1855
1650	1650011482109	712645F	2482
1650	1650011482109	712645F	9875
1650	1650011482109	712645F	1800
1650	1650012108535	736186A	1246
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	3387
1650	1650012108535	736186A	1211
1650	1650011482109	712645F	1378
1650	1650011482109	712645F	7946
1650	1650011433846	5003418-9	4330
1650	1650012108537	713516A	909
1650	1650011482109	712645F	1800
1650	1650RR9999999	5003418-12	4513
1650	1650011482109	712645F	1644
1650	1650012108537	713516A	993
1650	1650012108537	713516A	81
1650	1650011482109	712645F	781
1650	1650012099999	714179	146
1650	1650012099993	713343B	1800
1650	1650012361159	736355	1000
1650	1650012359955	736366B	2414
1650	1650012361159	736355E	1000
1650	1650012361159	736355E	1000

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1650	1650012361159	736355E	7589
1650	1650011482109	712645F	2776
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	2390
1650	1650011482109	712645F	3651
1650	1650011482109	712645F	4647
1650	1650011482109	712645F	1800
1650	1650012100001	718534	1144
1650	1650012108535	736186A	237
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650012108537	713516A	825
1650	1650012108535	736186A	184
1650	1650011482109	712645F	1800
1650	1650012108537	713516A	1800
1650	1650012099993	713343B	1800
1650	1650012099999	714179	1800
1650	1650011482109	712645F	1202
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650012108537	713516A	154
1650	1650012108537	713516A	162
1650	1650012100034	707716A	73
1650	1650012108535	736186A	664
1650	1650012100001	718534	993
1650	1650012100001	718534	965
1650	1650012099999	714179	250
1650	1650012099993	713343B	1800
1650	1650012099993	713343B	1800
1650	1650012100034	707716A	1800
1650	1650011433846	5003418-11	657
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650012100034	707716A	1800
1650	1650012100001	718534	1403
1650	1650012108535	736186A	1062
1650	1650011482109	712645F	1800
1650	1650011482109	712645F	1800
1650	1650011878159	A52703-1	4500
1660	1660012112141	41SG77-2	1153
1660	1660012112141	41SG77-2	295
1660	1660012105102	11248-7	3155
1660	1660012105102	11248-7	1218
1660	1660012105102	11248-7	468
1660	1660011433526	783422-1-1	8600
1660	1660012156392	780844-1-1	176
1660	1660012156393	780846-1-1	696
1660	1660012156397	780840-1-1	246
1660	1660012156391	780842-1-1	312
1660	1660012156393	780846-1-1	696

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1660	1660011433521	788104-2-1	13318
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1660	1660011433521	788104-2-1	11702
1660	1660011433521	788104-2-1	7829
1660	1660011433513	765318-1-2	478
1660	1660011429213	751509-1-3	885
1660	1660011429213	751509-1-3	997
1660	1660011429213	751509-1-3	888
1660	1660011429213	751509-1-3	885
1660	1660011433521	788104-2-1	6442
1660	1660011433527	783423-1-1	1338
1660	1660011433521	788104-2-1	10781
1660	1660011429211	751505-1-1	995
1660	1660011433527	783423-1-1	3995
1660	1660011429210	751502-1-1	995
1660	1660011433526	783422-1-1	5074
1660	1660011429211	751505-1-1	951
1660	1660011429216	751524-1-3	1033
1660	1660011433527	783423-1-1	1338
1660	1660011433520	765327-3-2	3136
1660	1660011433527	783423-1-1	1338
1660	1660011429213	751509-1-3	889
1660	1660011433521	788104-2-1	2877
1660	1660011437832	751782-1-4	1127
1660	1660011429214	751512-2-1	881
1660	1660011429211	751505-1-1	951
1660	1660011433525	783421-1-1	3995
1660	1660011429214	751512-2-1	880
1660	1660011433521	788104-2-1	6710
1660	1660011433527	783423-1-1	3995
1660	1660011437832	751782-1-4	495
1660	1660011433527	783423-1-1	3995
1660	1660011433526	783422-1-1	3689
1660	1660011429210	751502-1-1	996
1660	1660011429211	751505-1-1	952
1660	1660011433527	783423-1-1	3995
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1660	1660011433525	783421-1-1	3995
1660	1660011433527	783423-1-1	3995
1660	1660011429212	751506-1-1	1012
1660	1660011433526	783422-1-1	3995
1660	1660011433525	783421-1-1	3995
1660	1660011433526	783422-1-1	3995
1660	1660011433527	783423-1-1	3995
1660	1660011429213	751509-1-3	1117
1660	1660010350478	751525-1-4	22000
1660	1660011433526	783422-1-1	3995
1660	1660012066380	751744-1-2	638
1660	1660011433525	783421-1-1	3995
1660	1660011433521	783104-2-1	3104
1660	1660011433522	766645-2-1	934

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1660	1660012156389	780836-1-1	300
1660	1660011433517	765324-1-1	286
1660	1660011433527	783423-1-1	3995
1660	1660011433512	765317-2-2	522
1660	1660011433512	765317-2-2	526
1660	1660012069814	751558-1-1	346
1660	1660011433527	783423-1-1	3995
1660	1660011433527	783423-1-1	3995
1660	1660NCF707120	2284W000-1	2093
1660	1660NCF707120	2284W000-1	1725
1660	1660NCF707120	2284W000-1	277
1660	1660NCF707120	2284W000-1	1953
1660	1660NCF707120	2284W000-1	1643
1660	1660NCF707120	2284W000-1	1559
1660	1660NCF707120	2284W000-1	2408
1660	1660NCF707120	2284W000-1	1952
1660	1660NCF707120	2284W000-1	1711
1660	1660NCF707120	2284W000-1	4075
1660	1660012106728	2284W000	2925
1660	1660NCF707120	2284W000-1	1434
1660	1660NCF707120	2284W000-1	1817
1660	1660012126399	2348W000-1	5799
1660	1660011805767	2810200-101	4025
1660	1660011480459	27161202-08	2000
1660	1660011826296	5007346A	3183
1660	1660011480459	27161202-08	2030
1660	1660011480459	27161202-08	1790
1660	1660011480459	27161202-08	2000
1660	1660011486207	735343	1365
1660	1660011826296	5007346A	1181
1660	1660011826296	5007346A	1478
1660	1660011826296	5007346A	824
1660	1660011826296	5007346A	2240
1660	1660011826296	5007346A	2498
1660	1660011826296	5007346A	1138
1660	1660011826296	5007346A	3184
1660	1660011480459	27161202-08	2000
1660	1660011480459	27161202-08	1361
1660	1660011480459	27161202-08	2000
1660	1660011486207	735343	372
1660	1660011486207	735343	1417
1660	1660011480459	27161202-08	825
1660	1660011480459	27161202-08	846
1660	1660011480459	27161202-08	914
1660	1660011480459	27161202-08	1183
1660	1660011486207	735343	383
1660	1660011486207	735343	310
1660	1660011480459	27161202-08	1540
1660	1660011480459	27161202-08	2974
1660	1660011486207	735343	306
1660	1660011486207	735343	216

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1660	1660011486207	735343	405
1660	1660011486207	735343	612
1660	1660011486207	735343	279
1660	1660011480459	27161202-08	2000
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1660	1660011480459	27161202-08	1765
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1680	1680012645530	2118054-5	4000
1680	1680012645530	2118054-5	4000
1680	1680012645530	2118054-5	4000
1680	1680012043586	8-407-01	360
1680	1680012043586	8-407-01	1075
1680	1680012043586	8-407-01	750
1680	1680012575268	8-407-03	495
1680	1680012043586	8-407-01	1400
1680	1680012043586	8-407-01	816
1680	1680012043586	8-407-01	400
1680	1680012043586	8-407-01	258
1680	1680011826356	A1022A010-61	2007
1680	1680011826356	A1022A010-61	1035
1680	1680011826356	A1022A010-61	1035
1680	1680011826356	A1022A010-61	1035
1680	1680011826356	A1022A010-61	1035
1680	1680011826356	A1022A010-61	3000
1680	1680011826356	A1022A010-61	1035
1680	1680011636737	293E258G3	2500
1680	1680011636737	293E258G3	2500
1680	1680011655919	GM6014-1	60
1680	1680011655919	GM6014-1	344
1680	1680011655919	GM6014-1	60
1680	1680011655919	GM6014-1	344
1680	1680012128790	198-1200-802D	389
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1680	1680012128790	198-1200-802D	389
1680	1680011814268	E36B	1066
1680	1680011814268	E36B	1729
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680RR0129999	L5200154-051	813
1680	1680011814268	E36B	980

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1680	1680011814268	E36B	1066
1680	1680011484142	U53	6738
1680	1680011814268	E36B	937
1680	1680011814268	E36B	894
1680	1680011814268	E36B	980
1680	1680011814268	E36B	1066
1680	1680011814268	E36B	1029
1680	1680011814268	E36B	1849
1680	1680011814268	E36B	1849
1680	1680011814268	E36B	1729
1680	1680RR0129999	L5200154-051	801
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
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1680	1680012128790	198-1200-802D	389
1680	1680011814268	E36A	715
1680	1680011814268	E36A	715
1680	1680011814268	E36A	715
1680	1680011484142	U53	772
1680	1680012320669	U62A	1042
1680	1680NCD771224	Y55A	846
1680	1680012452797	295-200A	846
1680	1680012452797	295-200A	846
1680	1680012452797	295-200A	846
1680	1680012452797	295-200A	945
1680	1680012452797	298-200A	1028
1680	1680012452797	298-200A	765
1680	1680012452797	295-200A	1107
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	1729
1680	1680011814268	E36B	2044
1680	1680011814268	E36B	1729
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389

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1680	1680012128790	198-1200-802D	389
1680	1680011818790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
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1680	1680012128790	198-1200-802D	389
1680	1680012128790	198-1200-802D	389
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1680	1680012069658	550-2200-027A	639
1680	1680012452797	Y55	1729
1680	1680011692263	R15040-1	602
1680	1680011826354	R15036-1	1196
1680	1680011692263	R15040-1	1736
1680	1680011826354	R15036-1	1159
1680	1680011826354	R15036-1	965
1680	1680NCD771236	R1697M1-1	1419
1680	1680011692263	R15040-1	1082
1680	1680011493166	R1487M2-1	5936
1680	1680011809628	R15033-3	4015
1680	1680011493166	R1487M2-1	563
1680	1680011809628	R15033-3	1111
1680	1680011493166	R1487M2-1	5937
1680	1680011493166	R1487M2-1	5937
1680	1680NCD771236	R1697M1-1	602
1680	1680NCD771236	R1697M1-1	774
1680	1680NCD771236	R1697M1-1	1419
1680	1680011692263	R15040-1	1537
1680	1680011493166	R1487M2-1	5937
1680	1680011692263	R15040-1	1204
1680	1680NCD771236	R1697M1-1	1419
1680	1680NCD771236	R1697M1-1	1419
1680	1680NCD771236	R1697M1-1	1419
1680	1680011493134	NF53500-07A	1430
1680	1680012112086	NF52005-03E	317
1680	1680012057553	NF53500-05A	5835
1680	1680011484139	NF53500-06A	5835
1680	1680011484140	NF53500-08A	5835
1680	1680011483134	NF53500-07A	5835
1680	1680011484140	NF53500-08A	4107
1680	1680012112086	NR52005-03E	1980
1680	1680012325160	NF53400-03A	1305
1680	1680012112086	NR52005-03E	3200

FSC	NSN	PART NUMBER	REPAIR COST
1680	1680011484139	NF53500-06A	502
1680	1680012118062	713447D	1800
1680	1680012118062	713447D	3066
1680	1680012118062	713447D	4407
1680	1680012118062	713447D	837
1680	1680012118062	713447D	961
1680	1680012118062	713447D	1800
1680	1680012118062	713447D	863
1680	1680012118062	713447D	1106
1680	1680012118062	713447D	3510
1680	1680012118062	713447D	1800
1680	1680012118062	713447D	1055
1680	1680012118062	713447D	1800
1680	1680012118062	713447D	2255
1680	1680012118062	713447D	454
1680	1680012118062	713447D	476
1680	1680012118062	713447D	857
1680	1680011814175	1171-3	421
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1680	1680011814175	1171-1	421
1680	1680011814175	1171-3	421
1680	1680011814175	1171-3	421
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1680	1680011814175	1171-3	421
2835	2835011471900	3609195-1	2000
2835	2835011484278	386806-2-1	4847

FSC	NSN	PART NUMBER	REPAIR COST
2835	2835012116160	3880470-2	1255
2835	2835RR1069999	3886118-3-2	750
2835	2835012080059	3880420-3	354
2835	2835011882007	386808-4-10	50000
2835	2835012116160	3880470-2	1998
2835	2835011484278	386806-2-5	2179
2835	2835RRXXXXXXX	386808-4-14	2372
2835	2835011484278	386806-2-1	33000
2835	2835011471900	3609195-1	2000
2835	2835011471900	3609195-1	2000
2835	2835011471900	3609195-1	2000
2835	2835011484278	386806-2-1	2820
2835	2835011862007	386808-4-13	50000
2835	2835RRXXXXXXX	386808-4-4	50000
2835	2835011862007	386808-4-13	50000
2835	2835012116160	3880470-2	1000
2835	2835011471900	3609195-1	2000
2835	2835011471900	3609195-1	2000
2835	2835RR2229999	3620524-3	2000
2835	2835011484278	386806-2-5	3679
2835	2835011882007	386808-4-1	50000
2835	2835012116160	3880470-2	500
2835	2835011862007	386808-4-13	50000
2835	2835RR4449999	381380-3-9	50000
2835	2835011781061	3501589-3	4000
2835	2835012193680	3607072-3	4000
2835	2835011920783	3862351-3	3800
2835	2835RRXXXXXXX	3607071-5	14000
2835	2835RR6669999	3607071-4	14000
2835	2835RR6669999	3607071-4	14000
2835	2835012080939	3620334-1	700
2835	2835012080079	3620514-4	500
2835	2835RR6669999	3607071-4	14000
2835	2835NCD775776	3607071-7-1	14000
2835	2835001106852	698246-2	400
2835	2835004783757	977307-1	11000
2835	2835012189215	3610061-2	4200
2835	2835XXXXXXXXX	3620510-9	100000
2835	2835012116160	3880470-2	1000
2835	2835012080059	3880420-3	3500
2835	2835012116160	3880470-2	1000
2835	2835RR1069999	3607071-4-3	1000
2835	2835012080059	3880420-3	3500
2835	2835NCD774993	3607090-4	1500
2835	2835011882007	386808-4	50000
2835	2835012116160	3880470-2	3000
2835	2835012116160	3880470-2	3000
2835	2835RR1069999	3886118-3-2	2500
2835	2835011882007	386808-4	50000
2835	2835012080059	3880420-3	3500
2835	2835NCD774493	3607090-4	1500

FSC	NSN	PART NUMBER	REPAIR COST
2835	2835012116160	3880470-2	750
2835	2835NCD775776	3607071-7-1	1000
2835	2835NCD774493	3607090-4	1500
2835	2835011471900	3609195-1	2000
2835	2835011862007	386808-4-13	50000
2835	2835012080059	3880420-3	3500
2835	2835012116160	3880470-2	1000
2835	2835001118033	698249-1	4000
2835	2835001118033	698249-1	4000
2835	2835011920783	3862351-3	3700
2835	2835011920784	3862353-2	450
2835	2835012116160	3880470-2	1000
2835	2835011882007	386808-4-1	50000
2835	2835RR7009999	3607071-5-1	1000
2835	2835011484278	386806-2-1	5000
2835	2835NCD774993	3607090-4	1500
2835	2835RR4449999	381380-3-9	50000
2835	2835012116160	3880470-2	3500
2835	2835011862007	386808-4-13	50000
2853	2853011920784	3862353-2	400
2910	2910011938866	3601500-9	256
2910	2910011938866	3601500-9	1200
2915	2915011491451	395800-1	5656
2915	2915011491451	395800-1	839
2915	2915011491450	395500-1	1512
2915	2915011491451	395800-1	2169
2915	2915011491451	395800-1	2396
2915	2915011491451	395800-1	840
2915	2915011491451	395800-1	1615
2915	2915011491451	395800-1	1629
2915	2915011491451	395800-1	1661
2915	2915011491451	395800-1	875
2915	29151411451	395800-1	841
2915	2915011491451	395800-1	3173
2915	2915011491450	395500-1	812
2915	2915011491450	395500-1	770
2915	2915011491451	395800-1	4140
2915	2915011491451	395800-1	800
2915	2915011491451	395800-1	2315
2915	2915011783443	2710738M3	341
2915	2915011783466	2710951M2	250
2915	2915011783422	2750045-101	250
2915	2915011783443	2710738M3	466
2915	2915011783443	2710738M3	466
2915	2915011783443	2710738M3	466
2915	2915011783443	2710738M3	466
2915	2915011791608	2710950M1	250
2915	2915011783442	2750045-101	605
2990	2990011874163	3505492-6	803
2990	2990011926805	160100-2	8000
2990	2990011922611	3162666-7	1300

FSC	NSN	PART NUMBER	REPAIR COST
2990	2990011874163	3505492-6	2500
2990	2990011874163	3505492-6	2500
2990	2990012115537	3610076-1	2500
2990	2990012115536	3610077-1	5000
2990	2990011874163	3505492-5-2	2500
2990	2990011926805	160100-2	10000
2990	2990011874163	3505492-6	2500
2995	2995012046249	3214466-5-4	1944
2995	2995011968924	3505492-4-1	12500
2995	2995011438570	293E433G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E433G3	2500
2995	2995011857499	153D8205G1	1456
2995	2995011857499	153D8205G1	1456
2995	2995011857499	153D8205G1	1510
2995	2995012616069	282E261G5	2500
2995	2995012616069	282E261G5	2500
2995	2995011862828	282E261G04	2500
2995	2995012616069	282E261G5	2500
2995	2995012616069	282E261G5	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995012616069	282E261G5	2500
2995	2995012616069	282E261G5	2500
2995	2995011438570	293E443G3	2500
2995	2995012616069	282E261G5	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E433G3	2500
2995	2995011438570	293E433G3	2500
2995	2995011438570	293E443G3	2500
2995	2995011438570	293E433G3	2500
2995	2995011862828	282E261G4	2500
2995	2995012616069	282E261G5	1016
2995	2995012616069	282E261G5	2500
2995	2995011438570	293E433G3	2500
2995	2995012616069	282E261G5	2500
2995	2995012616069	282E261G5	2192
2995	2995011438570	293E443G3	1455

FSC	NSN	PART NUMBER	REPAIR COST
2995	2995011438570	293E433G3	2500
2995	2995011862828	282E261G4	2500
2995	2995012616069	282E261G5	1398
2995	2995012616069	282E261G5	2500
2995	2995012016642	320503-15	1000
2995	2995012000019	3501588-5	5000
2995	2995012124018	3501603-5	500
2995	2995012000020	3501968-10	1300
2995	2995RR8889999	3620332-1	450
2995	2995RR8889999	3620332-1	450
2995	2995012046249	3214466-5-4	2000
2995	2995012046249	3214466-5-4	2000
2995	2995011438543	721599B	2000
2995	2995011438543	721599B	2000
2995	2995011438543	721599B	2000
2995	2995011438543	721599B	1676
2995	2995011438543	721599B	2106
2995	2995011438543	721599B	2000
2995	2995011438543	721599B	2000
3010	3010012128969	3886090-4	1000
3010	3010012128969	3886090-4	1000
3010	3010012128969	3886090-4	2900
3010	3010011262838	3607071-7	14000
3010	3010012128969	3886090-4	2900
3010	3010012128969	3886090-4	2900
3010	3010012128969	3886090-4	2900
3010	3010012628388	3607071-7	1000
3010	3010012628383	3607071-7	1000
3010	3010012128969	3886090-4	2900
3010	3010012128969	3886090-4-1	5000
3040	3040001111473	698244-1	17000
4320	4320011921020	3880440-5-2	6200
4320	4320RR3339999	3880440-5	6200
4320	4320RR3339999	3880440-5	1064
4320	4320011921020	3880440-5-2	376
4320	4320RR3339999	3880440-5	6200
4320	4320RR3339999	3880440-5	1000
4320	4320012804938	3880633-1	4100
4320	4320012804938	3880633-1	4100
4320	4320012804938	3880633-1	4000
4320	4320012804938	3880633-1	4000
4320	4320012804938	3880633-1	4100
4320	4320012804938	3880633-1	4000
4320	4320012834938	3880633-1	4000
4320	4320RR3339999	3880440-5	6200
4320	4320RR3339999	3880440-5	5000
4320	4320RR3339999	3880440-5	5000
4320	4320RR3339999	3880440-5	5000
4320	4320RR3339999	3880440-5	5000
4320	4320012800493	3880633-1	4000
4320	4320011921020	3880440-5-2	5000

FSC	NSN	PART NUMBER	REPAIR COST
4320	4320012386762	A7V78DR2.0LZGMF	1600
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4320	4320011480387	624371	20000
4730	4730002660538	U16B	660
4810	4810012289189	2046142-1	4000
4810	4810012289190	2046142-2	4000
4810	4810012290987	2046143-1	4000
4810	4810011798304	109782-3-4	165
4810	4810011798304	109782-3-4	3400
4810	4810011798304	109782-3-4	165
4810	4810011798304	109782-3-4	3400
4810	4810012370112	3876099-1	500
4810	4810011798304	109782-3-4	3400
4810	4810012032403	3169758-3	250
4810	4810012110135	3606364-6	500
4810	4810011798304	109782-3	3400
4810	4810012110135	3606364-6	500
4810	4810011798304	109782-3-4	3400
4810	4810011798304	109782-3-4	3500
4810	4810011798304	109782-3-4	3400
4810	4810012113910	109750-2	900
4810	4810011798304	109782-3-4	3400
4810	4810012110135	3606364-6	1000
4810	4810011508083	751521-2-1	1337
4810	4810011649028	60320-1	334
4810	4810011655918	736262	2000
4810	4810011655918	736262	725
4820	4820012797111	3880718-1	1000
4820	4820012797111	3880718-1	1000
4820	4820012797111	3880718-1	1000
4820	4820012561853	5710110-101	2540
4820	4820012561853	5710110-101	2881
4820	4820011879232	3201-6	528
4820	4820011829736	60790-4	1326
4820	4820011829736	60790-4	822
4820	4820011829736	60790-4	822
4820	4820011829736	60790-4	1086
4820	4820011829736	60790-4	1086
4820	4820011829736	60790-4	1086
4820	4820011829736	60790-4	1086
4820	4820011829736	60790-4	1086
4820	4820011756150	27141252-51	500
4920	4920011601127	1262700-0001	760
4920	4920012562368	896225-01	325
4920	4920012562368	896225-01	332
4920	4920012562368	896225-01	186

FSC	NSN	PART NUMBER	REPAIR COST
4920	4920012562368	896225-01	340
4920	4920012562368	896225-01	229
4920	4920012562368	896225-01	38
4920	4920012562368	896225-01	38
4920	4920012562368	896225-01	139
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	189
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	367
4920	4920012562368	896225-01	379
4920	4920012562368	896225-01	568
4920	4920012562368	896225-01	365
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4920	4920012562368	896225-01	365
5831	5831011874285	622-6585-001	389
5831	5831011874285	622-6585-001	435
5831	5831011874285	622-6585-001	334
5831	5831011933117	622-6587-001	575
5831	5831011874285	622-6585-001	637
5831	5831011874285	622-6585-001	362
5831	5831011874285	622-6585-01	425
5831	5831011933117	622-6587-001	1215
5831	5831011874285	622-6585-001	477
5831	5831011874285	622-6585-001	466
5831	5831011874285	622-6585-001	446
5831	5831011874285	622-6585-001	457
5831	5831011874285	622-6585-001	336
5831	5831011874285	622-6585-001	285
5831	5831011874285	622-6585-001	462
5831	5831011874285	622-6585-001	342
5831	5831011874285	622-6585-01	285
5831	5831011874285	622-6585-001	378
5831	5831011874285	622-6585-001	431
5831	5831011874285	622-6585-001	384
5831	5831011874284	622-6586-001	428
5831	5831011874285	622-6585-001	737
5831	5831011874285	622-6585-001	457

FSC	NSN	PART NUMBER	REPAIR COST
5831	5831011874285	622-6585-001	368
5831	5831011874285	622-6585-001	488
5831	5831011874285	622-6585-001	332
5831	5831011874285	622-6585-001	795
5831	5831011874285	622-6585-001	457
5831	5831011874285	622-6585-001	916
5831	5831011874285	622-6585-001	498
5831	5831011874285	622-6585-001	378
5831	5831011874284	622-6586-001	301
5831	5831011933117	622-6587-001	437
5831	5831011874285	622-6585-001	810
5831	5831011874285	622-6585-001	715
5831	5831011874285	622-6585-001	584
5831	5831011874285	622-6585-001	709
5831	5831011874285	622-6585-001	431
5831	5831011874285	622-6585-001	218
5831	5831011874284	622-6586-001	244
5831	5831011874285	622-6585-001	789
5831	5831011874285	622-6585-001	545
5831	5831011874285	622-6585-001	428
5831	5831011874285	622-6585-001	207
5831	5831011874285	622-6585-001	426
5831	5831011874285	622-6585-001	345
5831	5831011874285	622-6585-001	329
5831	5831011874285	622-6585-001	355
5831	5831011874285	622-6585-001	376
5831	5831011874285	622-6585-001	425
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5831	5831011933117	622-6587-001	283
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5831	5831011874285	622-6585-001	392
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5831	5831011874285	622-6585-001	650
5831	5831011874285	622-6585-001	428
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5831	5831011874285	622-6585-001	470
5836	5836012182013	TQ-2024F	310
5915	5915012153504	560-0017-003	400
5930	5930011879914	213C118-68	1082
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5930	5930011879914	213C118-68	899
5930	5930012496118	8-406-01	1400
5930	5930011915181	3601974-8	421
5930	5930012529249	3876090-1	2900
5930	5930012117778	725666	208
5935	5935011791869	472413-41	225
5945	5945011745729	9002D01-4	260
5945	5945011745729	9002D01-4	260
5945	5945011745729	9002D01-4	600
5945	5945011745729	9002D01-4	260
5945	5945011745729	9002D01-4	270
5945	5945011745729	9002D01-4	270
5945	5945011745729	9002D01-4	270
5945	5945011745729	9002D01-4	233
5960	5960011848831	4016906-902	1420
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5960	5960011848831	4016906-902	1420
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5985	5985011840305	6520972-001	387
5985	5985011840305	6520972-001	561
5990	5990011507443	NF203649-2	726
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5999	5999011798453	6510207-002	319
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6105	6105012131141	3601670-4	2400
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6110	6110012240847	8-406-02	400
6110	6110011611087	712647D	1800
6110	6110011611087	712647D	1800
6110	6110011611087	712647D	1800
6110	6110011611087	712647D	624
6110	6110011611087	712647D	1800
6110	6110011611087	712647D	528
6110	6110011611087	712647D	390
6110	6110011611087	712647D	585
6110	6110011611087	712647D	1800
6110	6110011835248	424013	5000
6110	6110011835248	424013	6500
6110	6110011835248	424013	6500
6110	6110012211037	977J006-11	1405
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6110	6110011787727	977J006-10	2785
6110	6110012211037	977J006-11	1100
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6110	6110012211037	977J006-11	1301
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6110	6110012211037	977J006-11	1289
6110	6110012211037	977J006-11	1100
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6110	6110012211037	977J006-11	1100
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6110	6110012211037	977J006-11	1100
6110	6110012211037	977J006-11	1352
6110	6110012211037	977J006-11	1100
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6110	6110012211037	977J006-11	1100
6110	6110011787727	977J006-10	800
6110	6110012211037	977J006-11	1100
6110	6110012211037	977J006-11	1466
6110	6110012211037	977J006-11	800
6110	6110012211037	977J006-11	465
6110	6110012211037	977J006-11	1045
6110	6110012211037	977J006-11	465
6110	6110012211037	977J006-11	465
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6115	6115011497588	977J008-2	2984
6115	6115011497588	977J008-2	2723
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6115	6115011497588	977J008-2	3093
6115	6115011497588	977J008-2	3538
6115	6115011497588	977J008-2	3538
6115	6115011497588	977J008-2	3174
6115	6115011793862	947F226-8	600
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6115	6115011497588	977J008-2	3231
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6115	6115011497588	977J008-2	5944
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6115	6115011497588	977J008-2	3247
6115	6115011497588	977J008-2	2247
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6115	6115011497588	977J008-2	3418
6115	6115011497588	977J008-2	3466
6115	6115011497588	977J008-2	3247
6115	6115011497588	977J008-2	2247

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6115	6115011497588	977J008-2	2894
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6115	6115011497588	977J008-2	3114
6115	6115011497588	977J008-2	2956
6115	6115011497588	977J008-2	1100
6115	6115011497588	977J008-2	3830
6115	6115011497588	977J008-2	3114
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6130	6130XXXXXXXXX	709900-01	178
6130	6130XXXXXXXXX	709900-01	2938
6130	6130XXXXXXXXX	709900-01	2000
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6130	6130NCD894150	199BC101-1	2597
6140	6140012118676	29695-002	157
6220	6220012128801	703232-1	460
6220	6220012621935	705811	1087
6340	6340NCD776381	40-470-4P	630
6340	6340012283603	40-470-3P	700
6340	6340NCD776381	40-470-4P	615
6340	6340NCD776381	40-470-4P	700
6340	6340012307559	40-470-101P	306
6340	6340012283603	40-470-3P	600
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6605	6605012092460	4028903-902	670
6605	6605012092460	4028903-902	2867
6605	6605012092460	4028903-902	2800
6610	6610011415038	L5100012-02	2652
6610	6610012695437	2118546-3-1	1349
6610	6610RR1319999	L5100003-081	2954
6610	6610RR1319999	L5100003-081	4000
6610	6610RR1319999	L5100003-081	1794
6610	6610RR1319999	L5100003-051	1915
6610	6610011415038	L5100012-021	4231
6610	6610011415038	L5100012-021	1149
6610	6610012695437	2118546-3-1	4000
6610	6610012695437	2118546-3-1	3991
6610	6610RR111XXXX	L5100012-001	2076
6610	6610RR7779999	2120050-2	4000
6610	6610RR9369999	2120051-2	4000
6610	6610012695437	2118546-3-1	4000
6610	6610012695437	2118546-3-1	4000
6610	6610011415038	L5100012-021	4000
6610	6610011415038	L5100012-021	4000
6610	6610RRXXXXXXX	L5100003-081	2982
6610	6610RRXXXXXXX	L5100003-081	4000
6610	6610RRXXXXXXX	L5100012-007	4000
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6610	6610RR111XXXX	L5100012-001	2701
6610	6610RR7779999	2120050-2	4000
6610	6610011415038	L5100012-021	2399
6610	6610RR9369999	2120051-2	4000
6610	6610011415038	L5100012-021	1273
6610	6610RR7779999	2120050-1	4000
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6610	6610RR7779999	2120050-2	4000
6610	6610RR777XXXX	2120051-2	4000
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6610	6610011478438	3963611-9001	3000
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6610	6610011820089	3969951-9001	3000
6610	6610012413214	3969611-9003	1088
6610	6610011819935	3968351-9001	1170
6610	6610011478439	3963611-9002	3000
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6610	6610011796993	6510218-001	392
6610	6610011796993	6510218-001	823
6610	6610011798443	6183619-002	476
6610	6610011806293	6183620-002	600
6610	6610011793971	6510210-002	184
6610	6610011798455	6510205-001	438
6610	6610011478409	6223964-001	1914
6610	6610012166867	1262000-0101	10000
6610	6610012166867	1262000-0101	31000
6610	6610012166867	1262000-0101	31000
6610	6610012166867	1262000-0101	528
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6610	6610011829482	266-027-003	3148
6610	6610012630425	367-007-004	865
6610	6610012630425	367-007-004	1107
6610	6610011829919	367-007-003	828
6610	6610012630425	367-007-004	1051
6610	6610012630425	367-007-004	820
6610	6610011829919	367-007-003	1125
6610	6610012630425	367-007-004	1148
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6610	6610011829482	266-027-003	1975
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6610	6610011641427	573690-G01	1914
6610	6610011648485	573706-G07	1914
6610	6610011641428	573694-G01	1751
6610	6610011641427	573690-G01	1916
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6610	6610012119154	620994-G05	1506
6610	6610RR3019999	620994-G06	3089
6610	6610012009154	620994-G05	3089
6610	6610012009154	620994-G05	3379
6610	6610012009154	620994-G05	3089
6610	6610012009154	620994-G05	1506
6610	6610011648485	573706-G07	1364
6610	6610011648485	573706-G07	1364
6610	6610011642209	573702-G01	1751
6610	6610011642209	573702-G01	1777
6610	6610RR5559999	620994-G07	3735
6610	6610RR5559999	620994-G07	3089
6610	6610RRXXXXXXX	625885-G03	2778
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6610	6610RR5669999	625885-G04	7864
6610	6610011641427	573690-G01	1832
6610	6610011640498	573664-G02	1364
6610	6610012112584	626655-G03	3089
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6610	6610011477161	4028901-904	2742

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6610	6610012610316	4014805-922	2068
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6610	6610012551321	4014807-923	1599
6610	6610012551321	4014807-923	1599
6610	6610012551321	4014807-923	1599
6610	6610012551321	4014807-923	1599
6610	6610011478346	4014805-921	2068
6610	6610011478346	4014805-921	2068
6610	6610011478346	4014805-921	2068
6610	6610011478346	4014805-921	2068
6610	6610011829481	501-1230-01	2290
6610	6610012538017	40-661-1	1392
6610	6610012538017	40-661-1	554
6610	6610010264449	40-661-2	1547
6610	6610010264449	40-661-2	1500
6610	6610010264449	40-661-2	1567
6610	6610012639978	1581C3	5150
6610	6610RR5569999	542BV4	1153
6610	6610012639978	1581C2	500
6610	6610012639978	1581C2	1439
6610	6610012639978	1581C2	500
6610	6610012639978	1581C2	6894
6610	6610012639978	1581C2	500
6610	6610012639978	1581C2	3178
6610	6610012639978	1581C2	4216
6610	6610012639978	1581C2	1439
6610	6610012639978	1581C2	1439
6610	6610012639978	1581C2	4216
6610	6610012639978	1581C2	500
6610	6610012639978	1581C2	2239
6610	6610012639978	1581C2	2239

FSC	NSN	PART NUMBER	REPAIR COST
6610	6610RR5569999	542BV4	500
6610	6610011414960	472495-21	225
6610	6610011414960	472495-21	250
6610	6610011414960	472495-21	250
6610	6610011414960	472495-21	1000
6610	6610011414960	472495-21	888
6610	6610011414960	472495-21	242
6610	6610012594655	K320A026-03	3319
6610	6610012564655	K320A026-03	3319
6610	6610011414953	K320A026-01	3319
6610	6610012594655	K320A026-03	3319
6610	6610011414953	K320A026-01	3319
6610	6610011479072	K300A029-01	2346
6610	6610999999999	K300A030-02	3319
6610	6610012594655	K320A026-3	3319
6610	6610012594655	K320A026-03	3319
6610	6610011414953	K320A026-01	3319
6610	6610012551321	4024807-923	1599
6610	6610011796990	8500925-901	1800
6610	6610011793982	8500915-901	1800
6610	6610011803141	4016366-901	1400
6610	6610011803140	4016364-901	1800
6610	6610RR2229999	4015963-903	1800
6610	6610011806305	4016348-902	2000
6610	6610011793981	8500911-902	2400
6610	6610011811313	8500913-901	1800
6610	6610011783638	8500939-901	1800
6610	6610011787809	8500931-902	1800
6610	6610011796994	8500935-901	1800
6610	6610011796994	8500935-901	1800
6610	6610011806208	8500937-901	1800
6610	6610011478346	4014805-921	2200
6610	6610011478346	4014805-921	2200
6610	6610011478346	4014805-921	2200
6610	6610012610316	4014805-922	2200
6610	6610011478346	4014805-921	2200
6610	6610012551321	4014807-923	1760
6610	6610012551321	4014807-923	1760
6610	6610012610316	4014805-922	2200
6610	6610012551321	4014807-923	1740
6610	6610012551321	4014807-923	1740
6610	6610012551321	4014807-923	1740
6610	6610012551321	4014807-923	1600
6610	6610012610316	4014805-922	2100
6610	6610012610316	4014805-922	2100
6610	6610012551321	4014807-923	1600
6610	6610012610316	4014805-922	2200
6610	6610012551321	4014807-923	1740
6610	6610012551321	4014807-923	1740
6610	6610012610316	4014805-922	2200
6610	6610012551321	4014807-923	1740

FSC	NSN	PART NUMBER	REPAIR COST
6610	6610012610316	4014805-922	2210
6610	6610011478346	4014805-921	2210
6610	6610011478346	4014805-921	2210
6610	6610012551321	4014807-923	1600
6610	6610011478346	4014805-921	2210
6610	6610011477161	4028901-904	2600
6610	6610012551321	4014807-923	1600
6610	6610012551321	4014807-923	1600
6610	6610012551321	4014807-923	1600
6610	6610012551321	4014807-923	1600
6610	6610012551321	4014807-923	1600
6610	6610011793979	8500919-901	720
6610	6610011807558	4018010-903	720
6610	6610RR6079999	4016362-903	1400
6610	6610011799686	4016390-902	1800
6610	6610011799685	4016388-902	1400
6610	6610RRXXX9999	4016358-902	1400
6610	6610011787810	8500933-901	1400
6610	6610012142536	8500906-901	1800
6610	6610011903635	5630-24	944
6610	6610012506870	837910-7	645
6610	6610011478351	837910-4	1634
6610	6610012506870	837910-7	1288
6610	6610011477222	561-0000-008	1700
6610	6610XX9999999	561-0023-005	560
6610	6610011477221	560-0000-004	1800
6610	6610011477222	561-0000-008	200
6610	6610012144428	560-0014-003	200
6610	6610012147408	561-0119-005	200
6610	6610012150006	561-0018-004	200
6610	6610011477221	560-0000-004	1600
6610	6610011477221	560-0000-004	1600
6610	6610012144428	560-0014-003	350
6610	6610012628319	560-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	661001215[illegible]06	561-0018-003	500
6610	66100[illegible]+90	561-0028-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012144490	561-0028-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610012628319	561-0000-010	1800
6610	6610011477221	560-0000-004	1600
6615	6615RR8639999	4030466-904	1999
6615	6615011363198	4030470-903	2077
6615	6615011[illegible]51091	4030479-902	2077
6615	6615012164822	4028902-901	3008
6615	6615010363198	4030470-903	2077

FSC	NSN	PART NUMBER	REPAIR COST
6615	6615010351092	4030467-904	2077
6615	6615012164822	4028902-901	3008
6615	6615010363198	4030470-903	2077
6615	6615012164822	4028902-901	3008
6615	6615010363198	4030470-903	2077
6615	6615010363198	4030470-903	2077
6615	6615012164822	4028902-901	3008
6615	6615010351092	4030467-904	2077
6615	6615010363198	4030470-903	2077
6615	6615010363198	4030470-903	2077
6615	6615012695439	8500480-904	2077
6615	6615010363198	4030470-903	2077
6615	6615012695439	8500480-904	2077
6615	6615012252277	4028903-902	670
6615	6615010363198	4030470-903	2077
6615	6615012164822	4028902-901	3008
6615	6615010363198	4030470-903	2077
6615	6615010363198	4030470-903	2077
6615	6615010363198	4030470-903	2100
6615	6615012164822	4028902-901	2867
6615	6615012695439	8500480-904	2100
6615	6615010351091	4030469-903	2100
6615	6615011814333	4030674-901	719
6615	6615011814335	4010670-901	719
6615	6615011791783	4030680-901	719
6615	6615011793975	4030664-901	719
6615	6615011793977	4030723-901	1358
6615	6615011661331	4030588-901	719
6615	6615011649119	4030616-901	719
6615	6615011661315	4030696-901	719
6615	6615011661326	4030634-901	719
6615	6615011794007	4030722-901	880
6615	6615010361091	4030469-903	2100
6615	6615012272109	4030468-903	2100
6615	6615011814333	4030674-901	719
6615	6615RR8659999	4030468-905	2100
6615	6615010363198	4030470-903	2100
6615	6615012695439	8500480-904	2100
6615	6615011414959	8500480-902	2100
6615	6615012695439	8500480-904	2100
6615	6615011793977	4030723-901	1358
6615	6615012164822	4028902-901	2867
6615	6615010363198	4030470-903	2100
6615	6615010351091	4030469-902	2100
6615	6615010363198	4030470-903	2100
6615	6615012164822	4028902-901	2867
6615	6615012252277	4028903-902	2867
6615	6615010363198	4030470-903	2077
6615	6615012164822	4028902-901	2867
6615	6615012695439	8500480-904	2080
6615	6615010351091	4030469-902	2080

FSC	NSN	PART NUMBER	REPAIR COST
6615	6615010351092	4030467-904	2080
6615	6615010363198	4030470-903	2080
6615	6615011814334	4030672-901	720
6615	6615RR8659999	4030468-905	2080
6615	6615010363198	4030470-903	2080
6615	6615010363198	4030470-903	2080
6615	6615010363198	4030470-903	2080
6615	6615012272105	4030468-903	2080
6615	6615012164822	4028902-901	2867
6615	6615012164822	4028902-901	2867
6615	6615012164822	4028902-901	2867
6615	6615012252277	4028903-902	677
6615	6615012164822	4028902-901	3008
6615	6615010351091	4030469-902	2080
6615	6615010351091	4030469-902	2200
6615	6615012363198	4030470-903	2080
6615	6615010363198	4030470-903	2080
6615	6615012252277	4028903-902	670
6615	6615010363198	4030470-903	2080
6615	6615010363198	4030470-903	2080
6615	6615010363198	4030470-903	2080
6615	6615RR8639999	4030466-904	2080
6615	6615010363198	4030470-903	2080
6615	6615010363198	4030470-903	2100
6615	6615RR8659999	4030468-905	2100
6615	6615012252277	4028903-902	2900
6615	6615010363198	4030470-903	2080
6615	6615010351092	4030467-902-4	2080
6615	6615012272105	4030468-903	2040
6615	6615012164822	4028902-901	3000
6615	6615012164822	4028902-901	3008
6615	6615012164822	4028902-901	2900
6615	6615012695439	8500480-904	2040
6615	6615010363198	4030470-903	2100
6615	6615010363198	4030470-903	2100
6615	6615010351091	4030469-903	2100
6615	6615012252277	4028903-902	2800
6615	6615010351092	4030467-904	2100
6615	6615010351091	4030469-903	2100
6615	6615010351091	4030469-902	2100
6615	6615010351091	4030469-902	2100
6615	6615RR8659999	4030468-905	2100
6615	6615010363198	4030470-903	2100
6615	6615010353198	4030470-903	2100
6615	6615010351091	4030469-902	2100
6615	6615010351091	4030469-903	2100
6615	6615010363198	4030470-903	2100
6615	6615011852975	5630-23	3000
6615	6615011852975	5630-23	3000
6615	6615011852974	5630-22	3000
6615	6615011852974	5630-22	3000

FSC	NSN	PART NUMBER	REPAIR COST
6615	6615011895826	5630-21	3000
6615	6615011852975	5630-23	3000
6615	6615011895826	5630-21	3000
6615	6615011852974	5630-22	3000
6615	6615011895826	5630-21	2897
6615	6615011852975	5630-23	2897
6615	6615011852975	5630-23	4729
6615	6615011852974	5630-22	2897
6615	6615011852975	5630-23	2897
6615	6615011852975	5630-23	2897
6615	6615011895826	5630-21	2897
6615	6615011497588	977J008-2	3364
6615	6615011497588	977J008-2	3059
6615	6615011497588	977J008-2	3098
6620	6620012128802	703236-11	1166
6620	6620012285284	703231-1	533
6620	6620012128802	703236-11	688
6620	6620011829329	8DJ219WCH1	1298
6620	6620021829489	BTJ108GAH1	1000
6620	6620011829489	8TJ108GAG1	1000
6620	6620011829329	8DJ219WCH1	1200
6620	6620011853016	8DJ219WCG1	919
6620	6620RRXXXXXXX	8KE89AAD2	2000
6620	6620011853017	8DJ217WBB1	1000
6620	6620011829489	8TJ108GAH1	1000
6620	6620011644913	8DJ218WCD1	1500
6620	6620011644913	8DJ218WCD1	1500
6620	6620010378398	8TJ100GAR1	402
6620	6620011670881	8DJ218WCC1	2401
6620	6620011829763	8DJ219WCF1	639
6620	6620RRXXXXXXX	8KE89AAD1	2995
6620	6620011829489	8TJ108GAG1	1500
6620	6620021829489	8TJ108GAH1	700
6620	6620021829489	8TJ108GAH1	1816
6620	6620RR1219999	K300A030-04	3319
6680	6680011819656	015-022-003	341
6680	6680011819656	015-022-003	578
6680	6680011819656	015-022-003	368
6680	6680011829873	015-022-004	784
6680	6680011819657	265-008-006	500
6680	6680011819643	5820122-101	1920
6680	6680011425603	473403-01	325
6680	6680011425604	473401-01	1505
6680	6680012482349	473400-01	1753
6680	6680011425606	473402-01	1527
6680	6680011425603	473403-01	911
6680	6680012482349	473400-01	759
6680	6680011425603	473403-01	500
6680	6680011425604	473401-01	2178
6680	6680011425606	473402-01	620
6680	6680011425606	473402-1	1704

FSC	NSN	PART NUMBER	REPAIR COST
6680	6680011425604	473401-01	888
6680	6680011425606	473402-01	1050
6680	6680NCD771629	472358-304-41	700
6680	6680NCD771629	472358-304-41	350
6680	6680011425603	473403-01	1494
6680	6680011425606	473402-01	2062
6680	6680011425604	473401-01	1939
6680	6680011425603	473403-01	431
6680	6680011425604	473401-01	711
6685	6685011487902	60GP31-1	1167
6685	6685011487902	60GP31-1	1167
6685	6685012648689	41SG16-12	295
6685	6685012648689	41SG16-12	527
6685	6685011487902	60GP31-1	1167
6685	6685011486423	100178	135
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	295
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	295
6685	6685011487902	60GP31-1	1167
6685	6685011487902	60GP31-1	1167
6685	6685011487902	60GP31-1	7995
6685	6685012648689	41SG16-12	863
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	863
6685	6685012648689	41SG16-12	527
6685	6685012648689	41SG16-12	527
6685	6685011487902	60GP31-1	1167
6685	6685012648689	41SG16-12	470
6685	6685012648689	41SG16-12	863
6685	6685012648689	41SG16-12	295
6685	6685011487902	60GP31-1	1167
6685	6685012648689	41SG16-12	863
6685	6685011487902	60GP31-1	1167
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685011486423	100178	135
6685	6685NCD771664	6001751-3	139

FSC	NSN	PART NUMBER	REPAIR COST
6685	6685011650360	754610-3-1	286
6685	6685NCF708578	510DG5	954
6685	6685012648689	41SG16-12	340
7025	7025012199836	6160	100
7025	7025012199836	6160	198
7025	7025011400353	160-103007-005	311
7025	7025XXXXXXXXX	160-103433-002	796
7025	7025011407393	160-103519-001	2649

Appendix B: F-16 ICS Repairs
for Fiscal Year 1988 (16:1-3)

FSC	NSN	REPAIRED	REPAIR COST	BLOCK
1240	1240997360412	11	UNKNOWN	30
1270	1270997714187	93	UNKNOWN	30
1270	1270011709665	11	UNKNOWN	30
1270	1270997360404	6	UNKNOWN	30
1270	1270997360405	2	UNKNOWN	30
1270	1270997356356	156	UNKNOWN	30
1270	1270997360409	13	UNKNOWN	30
1270	1270011730662	4	UNKNOWN	30
1270	1270011730666	2	UNKNOWN	30
1270	1270997207737	17	UNKNOWN	30
1270	1270997714188	35	UNKNOWN	30
1270	1270997714189	29	UNKNOWN	30
1270	1270997356352	87	UNKNOWN	30
5999	5999998919910	129	UNKNOWN	30
5999	5999357356317	1	UNKNOWN	30
5999	5999997356324	3	UNKNOWN	30
5999	5999NCE320231	15	UNKNOWN	30
5999	5999NCE320240	4	UNKNOWN	30
5999	5999997360402	2	UNKNOWN	30
5999	5999997834031	19	UNKNOWN	30
5999	5999997766882	23	UNKNOWN	30
5999	5999NCE320232	30	UNKNOWN	30
5999	5999997217250	31	UNKNOWN	30
5999	5999997419554	42	UNKNOWN	30
5999	5999NCE320239	10	UNKNOWN	30

Appendix C: Federal Supply Class Titles (9:4-25)

FSC	TITLE
1240	Optical Sighting and Ranging Equipment
1270	Aircraft Gunnery Fire Control Components
1560	Airframe Structural Components
1620	Aircraft Landing Gear Components
1630	Aircraft Wheel and Brake Systems
1650	Aircraft Hydraulic, vacuum, & Deicing Components
1660	Aircraft Air Cond, Heating, and Pressurization Eqp
1680	Miscellaneous Aircraft Accessories and Components
2835	Gas Turbines & Jet Engines, Excpt Acft & Cmpts
2910	Engine Fuel System Components, Nonaircraft
2915	Engine Fuel System Components, Aircraft
2990	Miscellaneous Engine Accessories, Nonaircraft
2995	Miscellaneous Engine Accessories, Aircraft
3010	Torque Converters and Speed Changers
3040	Miscellaneous Power Transmission Equipment
4320	Power and Hand Pumps
4730	Fittings and Specialties, Hose, Pipe and Tube
4810	Valves, Powered
4820	Valves, Nonpowered
4920	Aircraft Maintenance & Repair Specialized Equipment
5831	Intercom and Public Address Systems, Airborne
5836	Video Recording and Reproducing Equipment
5915	Filters and Networks
5930	Electrical Switches
5945	Relays and Solenoids
5960	Electron Tubes and Associated Hardware
5963	Electronic Modules
5985	Antennas, Waveguide, and Related Equipment
5990	Synchros and Resolvers
5999	Misc Electrical and Electronic Components
6105	Motors, Electrical
6110	Electrical Control Equipment
6115	Generators and Generator Sets, Electrical
6130	Converters, Electrical, Nonrotating
6140	Batteries, Rechargeable
6220	Electric Vehicular Lights and Fixtures
6340	Aircraft Alarm and Signal Systems
6605	Navigational Instruments
6610	Flight Instruments
6615	Autopilot Mechanisms and Airborne Gyro Components
6620	Engine Instruments
6680	Liquid/Gas Flow, Lqd Lvl and Mech Motion Instrument
6685	Pressure, Temp, and Humidity Meas & Control Insts
7025	ADP Input/Output and Storage Devices

Appendix D: SAS Software Products

SAS Program File

```
options ls=76; data cost; infile cost; input group $ cost;
proc sort; by group; proc univariate normal; by group;
var cost; proc anova; class group; model cost=group; means
group / t bon regwf;
```

SAS LIS Output File for B-1B Cost Data

GROUP=1650 VARIABLE=COST

UNIVARIATE MOMENTS

N	167	SUM WGTS	167
MEAN	2081.1	SUM	347543
STD DEV	2639.45	VARIANCE	6966692
SKEWNESS	2.85307	KURTOSIS	9.38567
USS	879741093	CSS	1156470812
CV	126.83	STD MEAN	204.247
T:MEAN=0	10.1891	PROB>|T|	0.0001
SGN RANK	7014	PROB>|S|	0.0001
NUM ^= 0	167		
W:NORMAL	0.270659	PROB<W	<.01

QUANTILES(DEF=4)			EXTREMES		
100% MAX	15000	99%	15000	LOWEST	HIGHEST
75% Q3	2000	95%	7701.8	50	9875
50% MED	1764	90%	5151.2	73	11177
25% Q1	345	10%	337.2	74	14000
0% MIN	50	5%	120.8	74	15000
		1%	65.64	81	15000

RANGE	14950
Q3-Q1	1655
MODE	1800

GROUP=1660 VARIABLE=COST

UNIVARIATE MOMENTS

N	119	SUM WGTS	119
MEAN	2515.92	SUM	299395
STD DEV	2973.7	VARIANCE	8842884
SKEWNESS	3.46111	KURTOSIS	16.8771
USS	1796715481	CSS	1043460304
CV	118.195	STD MEAN	272.599
T:MEAN=0	9.22941	PROB>|T|	0.0001
SGN RANK	3570	PROB>|S|	0.0001
NUM ^= 0	119		
D:NORMAL	0.215678	PROB>D	<.01

QUANTILES(DEF=4)

100% MAX	22000	99%	20263.6
75% Q3	3995	95%	8600
50% MED	1540	90%	4075
25% Q1	885	10%	346
0% MIN	176	5%	286
		1%	184

EXTREMES

LOWEST	HIGHEST
176	9070
216	10781
246	11702
277	13318
279	22000

RANGE	21824
Q3-Q1	3110
MODE	3995

GROUP=1680 VARIABLE=COST

UNIVARIATE MOMENTS

N	196	SUM WGTS	196
MEAN	1196.92	SUM	234596
STD DEV	1342.78	VARIANCE	1803047
SKEWNESS	2.42651	KURTOSIS	5.66915
USS	632386408	CSS	351594147
CV	112.186	STD MEAN	95.9126
T:MEAN=0	12.4793	PROB>|T|	0.0001
SGN RANK	9653	PROB>|S|	0.0001
NUM ^= 0	196		
D:NORMAL	0.242244	PROB>D	<.01

GROUP=1680 VARIABLE=COST

QUANTILES(DEF=4)				EXTREMES	
100% MAX	6738	99%	5961.03	LOWEST	HIGHEST
75% Q3	1419	95%	4621.2	60	5936
50% MED	715	90%	2650	60	5937
25% Q1	389	10%	389	258	5937
0% MIN	60	5%	389	317	5937
		1%	60	344	6738

RANGE	6678
Q3-Q1	1030
MODE	389

GROUP=2835 VARIABLE=COST

UNIVARIATE MOMENTS

N	72	SUM WGTS	72
MEAN	13559.1	SUM	976254
STD DEV	21158.6	VARIANCE	447685715
SKEWNESS	1.84245	KURTOSIS	2.97235
USS	4.502E+10	CSS	3.179E+10
CV	156.047	STD MEAN	2493.56
T:MEAN=0	5.43763	PROB>|T|	0.0001
SGN RANK	1314	PROB>|S|	0.0001
NUM ^= 0	72		
D:NORMAL	0.365418	PROB>D	<.01

QUANTILES(DEF=4)				EXTREMES	
100% MAX	100000	99%	100000	LOWEST	HIGHEST
75% Q3	14000	95%	50000	354	50000
50% MED	3250	90%	50000	400	50000
25% Q1	1500	10%	750	450	50000
0% MIN	354	5%	482.5	500	50000
		1%	354	500	100000

RANGE	99646
Q3-Q1	12500
MODE	50000

GROUP=2995 VARIABLE=COST

UNIVARIATE MOMENTS

N	63	SUM WGTS	63
MEAN	2363.63	SUM	148909
STD DEV	1458.18	VARIANCE	2126296
SKEWNESS	5.52674	KURTOSIS	38.7271
USS	483796869	CSS	131830357
CV	61.6924	STD MEAN	183.714
T:MEAN=0	12.8659	PROB>|T|	0.0001
SGN RANK	1008	PROB>|S|	0.0001
NUM ^= 0	63		
D:NORMAL	0.431	PROB>D	<.01

QUANTILES(DEF=4)

100% MAX	12500	99%	12500
75% Q3	2500	95%	2500
50% MED	2500	90%	2500
25% Q1	2000	10%	1339.2
0% MIN	450	5%	600
		1%	450

EXTREMES

LOWEST	HIGHEST
450	2500
450	2500
500	2500
1000	5000
1016	12500

RANGE	12050
Q3-Q1	500
MODE	2500

GROUP=4320 VARIABLE=COST

UNIVARIATE MOMENTS

N	28	SUM WGTS	28
MEAN	8076.43	SUM	226140
STD DEV	7168.91	VARIANCE	51393330
SKEWNESS	1.05439	KURTOSIS	-0.661382
USS	3214023472	CSS	1387619915
CV	88.7634	STD MEAN	1354.8
T:MEAN=0	5.96136	PROB>|T|	0.0001
SGN RANK	203	PROB>|S|	0.0001
NUM ^= 0	28		
W:NORMAL	0.711079	PROB<W	<.01

GROUP=4320 VARIABLE=COST

QUANTILES(DEF=4)				EXTREMES		
100% MAX	20000	99%	20000	LOWEST	HIGHEST	
75% Q3	16550	95%	20000	376	20000	
50% MED	5000	90%	20000	1000	20000	
25% Q1	4000	10%	1057.6	1064	20000	
0% MIN	376	5%	656.8	1600	20000	
		1%	376	4000	20000	

RANGE	19624
Q3-Q1	12550
MODE	20000

GROUP=6115 VARIABLE=COST

UNIVARIATE MOMENTS

N	71	SUM WGTS	71
MEAN	3447.82	SUM	244795
STD DEV	3842.54	VARIANCE	14765129
SKEWNESS	5.12902	KURTOSIS	27.7243
USS	1877567371	CSS	1033559033
CV	111.449	STD MEAN	456.026
T:MEAN=0	7.56057	PROB>|T|	0.0001
SGN RANK	1278	PROB>|S|	0.0001
NUM ^= 0	71		
D:NORMAL	0.406131	PROB>D	<.01

QUANTILES(DEF=4)				EXTREMES		
100% MAX	25000	99%	25000	LOWEST	HIGHEST	
75% Q3	3415	95%	5270.2	600	3945	
50% MED	3138	90%	3538	600	4821	
25% Q1	2836	10%	643	600	5944	
0% MIN	600	5%	600	600	25000	
		1%	600	600	25000	

RANGE	24400
Q3-Q1	579
MODE	600

GROUP=6605 VARIABLE=COST

UNIVARIATE MOMENTS

N	9	SUM WGTS	9
MEAN	2704.11	SUM	24337
STD DEV	766.374	VARIANCE	587330
SKEWNESS	-2.9477	KURTOSIS	8.75836
USS	70508589	CSS	4698637
CV	28.3411	STD MEAN	255.458
T:MEAN=0	10.5853	PROB>|T|	0.0001
SGN RANK	22.5	PROB>|S|	0.0071401
NUM ^= 0	9		
W:NORMAL	0.45557	PROB<W	<.01

QUANTILES(DEF=4)

100% MAX	3000	99%	3000
75% Q3	3000	95%	3000
50% MED	3000	90%	3000
25% Q1	2833.5	10%	670
0% MIN	670	5%	670
		1%	670

EXTREMES

LOWEST	HIGHEST
670	3000
2800	3000
2867	3000
3000	3000
3000	3000

RANGE	2330
Q3-Q1	166.5
MODE	3000

GROUP=6610 VARIABLE=COST

UNIVARIATE MOMENTS

N	293	SUM WGTS	293
MEAN	2251.97	SUM	659827
STD DEV	2663.37	VARIANCE	7093528
SKEWNESS	8.78978	KURTOSIS	92.2779
USS	3557220175	CSS	2071310039
CV	118.268	STD MEAN	155.596
T:MEAN=0	14.4732	PROB>|T|	0.0001
SGN RANK	21535.5	PROB>|S|	0.0001
NUM ^= 0	293		
D:NORMAL	0.238543	PROB>D	<.01

GROUP=6610 VARIABLE=COST

QUANTILES(DEF=4)				EXTREMES	
100% MAX	31000	99%	11260	LOWEST	HIGHEST
75% Q3	2855.5	95%	4000	184	6894
50% MED	1800	90%	3735	200	7864
25% Q1	1403.5	10%	556.4	200	10000
0% MIN	184	5%	500	200	31000
		1%	200	200	31000

RANGE	30816
Q3-Q1	1452
MODE	1800

GROUP=6615 VARIABLE=COST

UNIVARIATE MOMENTS

N	121	SUM WGTS	121
MEAN	2197.82	SUM	265936
STD DEV	709.655	VARIANCE	503610
SKEWNESS	-0.323906	KURTOSIS	1.15786
USS	644912136	CSS	60433160
CV	32.289	STD MEAN	64.5141
T:MEAN=0	34.0673	PROB>|T|	0.0001
SGN RANK	3690.5	PROB>|S|	0.0001
NUM ^= 0	121		
D:NORMAL	0.275382	PROB>D	<.01

QUANTILES(DEF=4)				EXTREMES	
100% MAX	4729	99%	4428.7	LOWEST	HIGHEST
75% Q3	2867	95%	3008	670	3008
50% MED	2100	90%	3000	670	3059
25% Q1	2077	10%	719	677	3098
0% MIN	670	5%	719	719	3364
		1%	670	719	4729

RANGE	4059
Q3-Q1	790
MODE	2100

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
GROUP	10	1650 1660 1680 2835 2995 4320 6115 6605 6610 6615

NUMBER OF OBSERVATIONS IN DATA SET = 1139

DEPENDENT VARIABLE: COST

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F
MODEL	9	9837511411.2	1093056823.467	31.62	0.0
ERROR	1129	39026662182.673	34567459.861		
CORRECTED TOTAL	1138	48864173593.874			

R-SQUARE	C.V.	ROOT MSE	COST MEAN
0.201324	195.3667	5879.4098	3009.422

SOURCE	DF	ANOVA SS	F VALUE	PR > F
GROUP	9	9837511411.2008	31.62	0.0

T TESTS (LSD) FOR VARIABLE: COST

NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=1129 MSE=34567460

CRITICAL VALUE OF T=1.96207

LEAST SIGNIFICANT DIFFERENCE=2429.9

WARNING: CELL SIZES ARE NOT EQUAL.

HARMONIC MEAN OF CELL SIZES=45.077

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

T	GROUPING	MEAN	N	GROUP
	A	13559	72	2835
	B	8076	28	4320
	C	3448	71	6115
	C			
	C	2704	9	6605
	C			
	C	2516	119	1660
	C			
	C	2364	63	2995
	C			
	C	2252	293	6610
	C			
	C	2198	121	6615
	C			
	C	2081	167	1650
	C			
	C	1197	196	1680

Ryan-Einot-Gabriel-Welsch Multiple F (REGWF) Test

RYAN-EINOT-GABRIEL-WELSCH MULTIPLE F TEST FOR

VARIABLE: COST

NOTE: THIS TEST CONTROLS THE TYPE I EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=1129 MSE=34567460

WARNING: CELL SIZES ARE NOT EQUAL.

HARMONIC MEAN OF CELL SIZES=45.077

NUMBER OF MEANS	2	3	4	5	6
CRITICAL F	6.6208	4.19738	3.28076	2.78955	2.48003

NUMBER OF MEANS	7	8	9	10
CRITICAL F	2.26558	2.1074	1.94659	1.88816

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

REGWF	GROUPING	MEAN	N	GROUP
	A	13559	72	2835
	B	8076	28	4320
	C	3448	71	6115
	C			
	C	2704	9	6605
	C			
	C	2516	119	1660
	C			
	C	2364	63	2995
	C			
	C	2252	293	6610
	C			
	C	2198	121	6615
	C			
	C	2081	167	1650
	C			
	C	1197	196	1680

Bonferroni (Dunn) T Test

BONFERRONI (DUNN) T TESTS FOR VARIABLE: COST

NOTE: THIS TEST CONTROLS THE TYPE I EXPERIMENTWISE ERROR RATEBUT GENERALLY HAS A HIGHER TYPE II ERROR RATE THAN REGWQ

ALPHA=0.05 DF=1129 MSE=34567460

CRITICAL VALUE OF T=3.26919

MINIMUM SIGNIFICANT DIFFERENCE=4048.7

WARNING: CELL SIZES ARE NOT EQUAL.

HARMONIC MEAN OF CELL SIZES=45.077

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

BON	GROUPING	MEAN	N	GROUP
	A	13559	72	2835
	B	8076	28	4320
	C	3448	71	6115
	C			
	C	2704	9	6605
	C			
	C	2516	119	1660
	C			
	C	2364	63	2995
	C			
	C	2252	293	6610
	C			
	C	2198	121	6615
	C			
	C	2081	167	1650
	C			
	C	1197	196	1680

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Vita

Captain Robert E. Dulong [redacted] He enlisted in the USAF in January 1969 and was trained as an aircraft maintenance crew chief. Many varied assignments followed, including three duty tours in Southeast Asia with B-52D aircraft during the Vietnam War. In 1973, he was assigned to Plattsburgh AFB, New York where he worked on KC-135 and FB-111 aircraft. In 1980, while still assigned to Plattsburgh AFB, he received the degree of Bachelor of Science in Industrial Technology from Southern Illinois University at Carbondale. In July 1982, then-Senior Master Sergeant Dulong accepted his commission in the USAF through Officer Training School and he became an aircraft maintenance officer. He served as a flightline maintenance officer on B-52G and KC-135 aircraft at Robins AFB, Georgia, and in 1985, he moved to Dyess AFB, Texas, where he was the Bomber Branch OIC officer during the deployment of the B-1B weapon system. He went on to serve as the Executive Officer to the 96th Bombardment Wing Commander from December 1987 until entering the School of Systems and Logistics, Air Force Institute of Technology, in May 1988. Upon graduation, he is assigned to the Bomber Systems Division at Headquarters Strategic Air Command.

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Assistant Professor
Department of Logistics Management

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Larry W. Emmelhainz

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The purpose of this research was to determine what categories of items contribute the most cost and the highest demand for repair to interim contractor support in the acquisition process. Six investigative questions guided the project: 1). What items do the contractors repair most frequently?; 2). Can these items be grouped by Federal Supply Classes?; 3). What are the costs associated with these items/classes?; 4). Are the items/classes the same or different in different weapon systems?; 5). What are the descriptive statistics for the various items/classes?; and, 6). What actions can the Air Force take to reduce the time frame for paying these costs?.

The study was conducted by performing a review of available literature, gathering samples of ICS repairs in both the B-1B and the F-16 programs, and analyzing those samples. Conclusions included answers to the investigative questions mentioned above.

Analysis of the data found few similarities in the two weapon system programs. Federal Stock Classes common to both weapon system programs exhibited differing behaviors. Cost data for the F-16 program was non-existent so cost comparisons in the two programs could not be achieved.